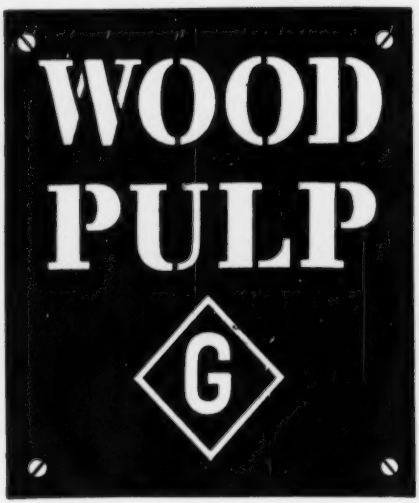
72nd ANNUAL REVIEW and CONVENTION NUMBER

Paper TRADE JOURNAL

FEBRUARY 24, 1949



Established 1886

"O, what men dare do!
What men may do!
What men daily do!"
SHAKESPEARE

It has been our privilege to see progress and achievement that have been nothing short of amazing in Pulp and Paper, decade by decade for sixty-three years.

Impressive as the industry's past has been, vast untapped potentialities remain to be realized. Men are thinking, planning, building—to develop new products and new uses for a world that never stops wanting.

Full faith for the future!

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— INCORPORATED —
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Two NOW GROW WHERE ONLY *One* GREW BEFORE . . .

Any horticulturist will tell you that one of the most difficult types of gardening is the cultivation of a lawn. It takes long and proper preparation of soil, the planting of good seed, and painstaking care after the seeds begin to grow.

We're not horticulturists, but we see the analogy in building a competent personnel in business. It's been that way with us. In the early days of Downingtown, our engineering staff was small, but carefully selected and trained. And, like the blades of grass, our engineering staff has multiplied in number. Today, after long and proper preparation, good planting of knowledge and painstaking care of sound engineering, we are better equipped than ever to fulfill your needs . . . quickly. And this "cultivated" engineering staff has the added advantage of drawing on our vast, fertile "reservoir of knowledge" built up during our 69 years of designing and building machinery for paper makers. *Another "reason why" for coming to DOWNINGTOWN.*

DOWNINGTOWN MANUFACTURING COMPANY

DOWNINGTOWN, PA.

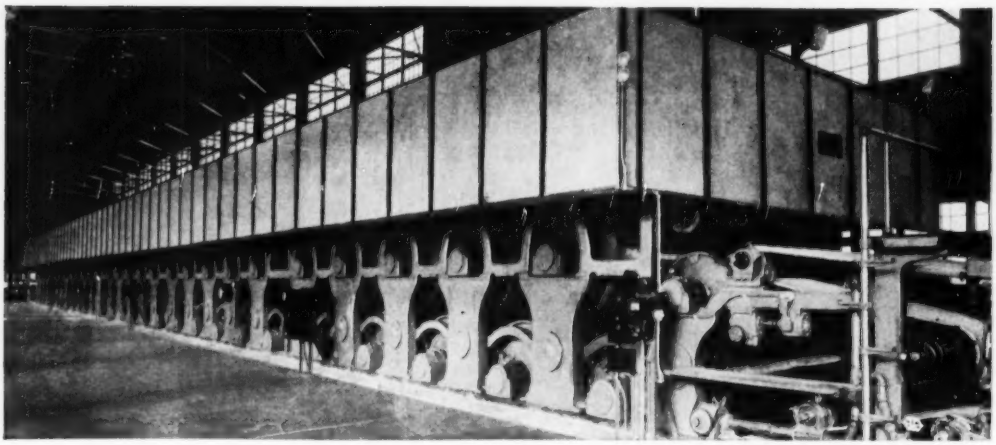
DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

Appleton FELTS

APPLETON WOOLEN MILLS - APPLETON, WIS.

KEEP CIRCULATING SYSTEMS CLEAN

*Assure uninterrupted paper production by using Texaco Ursa Oil X***



*Texaco Ursa Oil X*** is fully detergent and dispersive . . . resists oxidation, sludging and foaming . . . guards against rust . . . keeps oil lines clear. Thus, dryer roll bearings are constantly "washed" with clean, cool oil that reduces wear and carries off paper dust, water and other foreign matter for easy removal by the oil filter.

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TEXACO

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TEXACO Lubricants and Fuels

FOR THE PAPER INDUSTRY

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MEMBER

FEB. 24, 1949 In This Issue

	Page
Cola G. Parker Again Heads APPA	53
Bachmann Heads TAPPI	53
The Growth of Paper Consumption	54
Paper in the National Industrial Economy	56
Another New High Achieved by the Paper Industry	57
Interim Report on the Pulping Qualities of Crushed and Uncrushed Bamboo Chips	63
Conveyors—The Arteries of Production	69
Hazards Encountered in the Chemical Pulp Industry	71
Durham Installs Dravo Heater	73
Casein in the World Market	86
The Casein Outlook for 1949	87
The Tapioca, Corn and Potato Starch Situation In Review	88
Potato Starch Production in the United States	90
A Review of the 1948 Market Pulp Situation	92
Review and Outlook for Unbleached Kraft Paper	93
Newsprint Paper in 1948	94
The Rosin and Rosin Size Outlook for 1949	102
"Cash Register Complex" a Fallacy	104
Annual Review, Pulp and Paper	112
Tappi Reflects Industry's 1948 Progress	116
Factors That Account for Tappi Progress	124
The Traffic Angle	148

DEPARTMENTS

	Page		Page
Industrial Development Section	63	Financial Record	84
Trends	76	Production Ratio Report	128
Imports	78	Obituary	130
Prices	79	Classified Advertising	162
Markets	82		

INDEX TO ADVERTISEMENTS ON PAGE 178

Paper TRADE JOURNAL

VOL. 128 **NO. 8**

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that's "fit to print!"

Like the star editor in the publication office, NOPCO KF* —*star "bubble-buster"*—helps the paper manufacturer to make a paper that's fit to print.

NOPCO KF improves sheet formation even at increased machine speeds by eliminating the twin foes of good paper production—excess foam and faulty fiber dispersion. Entrained air—common cause of thin spots—is dissipated as if stock were being handled at slow speeds —because NOPCO KF keeps working on the wire.

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SUPER "BUBBLE-BUSTER"

An affiliate of the American Pulp and Paper Mill Superintendents Association

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Birthplace of a Great Idea

In the 1860's John Huyck and his son, Francis Conkling Huyck, conducted a general store in Rensselaerville, New York. Here young Huyck found that successful storekeeping was firmly based on good service to the customer. He had imagination and initiative and he was eager to apply his talents to a more challenging enterprise. Soon the opportunity came. America's paper mills were beginning to boom, but papermakers' felts were imported from Europe. Why not make these felts right in Rensselaerville? John Huyck appraised the opportunity and encouraged his son to go ahead. So in 1870 Francis Conkling Huyck, with an associate, opened a felt mill and commenced the manufacture of papermakers' felts. That venture grew to become the firm of F.C. Huyck & Sons. Today this company strives to perpetuate the policy established by its founder—good service to the great American paper industry.

The dramatic story of paper is told in the sound-and-color film, "Paper — Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

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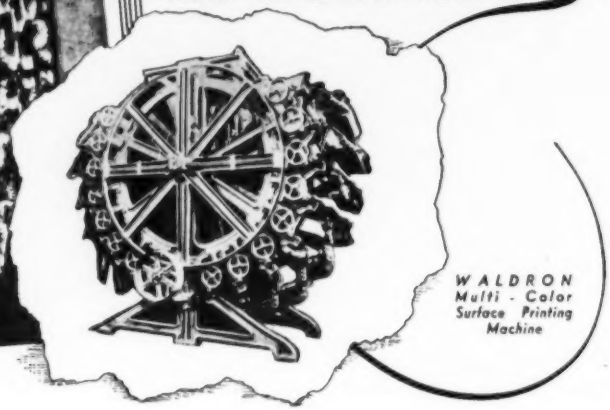
HUYCK *Felts*

Paper Magic is being performed with

WALDRON PROCESSING Machines

my hankies cost more than my...
BEAUTIFUL CLOPAY DRAPES!"
Smart as a button—that's me—to have found drapeable Clopay Drapes at penny prices. So fabric looking they fooled my Bridge Club. That soft, textured, expensive-as-cloth effect had them oh-ing and ah-ing! And when I told them these plasticized cellulose drapes cost only 98¢, off they went to get some of their very own!



WALDRON Multi - Color Surface Printing Machine

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WALDRON machines are used by other leading manufacturers such as Pervel Corp., Ben Mont Papers, Inc. and United Wall Paper, Inc., for paper and plastic coating, printing, embossing, impregnating, laminating, waxing, gumming, winding, slitting, guiding and other operations. Literature describing any type of equipment is available to you.

Through the medium of its fine, colorful and inexpensive drapes, curtains, venetian blinds and similar products, CLOPAY has brought beauty to millions of homes. The intriguing products of CLOPAY and other famous manufacturers of similar lines can be truthfully called "paper magic"—performed with the aid of ingenious WALDRON machines. There's a machine type and design in the WALDRON line to solve your processing problem. Investigate the possibilities for your product.

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Offices in principal cities of the United States, Canada and throughout the world

BROWN *Advanced Instrumentation* FOR THE PAPER INDUSTRY
Product of MINNEAPOLIS Honeywell

TENAX FELTS

—excellently made—carefully tested
—with all the qualities to help you *make better paper*—at lower operating cost

IN THE LABORATORY OF THE LOCKPORT MILL

Numerous and thorough tests are applied at each stage of production of Ténax Felts, to insure attainment of the excellence which contributes to the high quality of your paper—the efficiency of your operation.

The Lockport representative in your territory is fully qualified to advise on all technical questions relating to felts. He is at your service as is our plant and all its people. We invite your inquiries.

LOCKPORT FELT COMPANY · NEWFANE, NEW YORK

"I've never seen a strength report like this... what's your secret?"

"It's no secret... it's Cellate® and Brown Company technical service."

Cellate is the "strong man" in Brown Company's family of wood fibres. Papers destined to lead a busy life . . . maps, bags, envelopes, ledger sheets, for example, inherit rugged strength from Cellate pulps.

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Experience in a diversified range of top industries . . . plus Brown Company's control of huge raw material resources . . . mean a quicker, more efficient solution to your problem when you get in touch with any of the sales offices below. ®

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Foremost Producers of Purified Cellulose

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PULP

Perkins-Goodwin Co.

ESTABLISHED 1846

30 ROCKEFELLER PLAZA • NEW YORK.

CHICAGO, ILLINOIS LUFKIN, TEXAS STOCKHOLM, SWEDEN

PAPER

Our Service Does NOT End At Your Doorstep

You order your chemicals . . . and we deliver them. *BUT* General Chemical's service does not stop at your doorstep. Our Technical Service Organization, for example, has been created solely to help General Chemical customers solve their problems involving the handling, storing and use of chemicals.

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That is why General's Technical Servicemen so frequently offer suggestions and ideas that point the way to new efficiencies and economies in production and research operations.

Remember—General's Technical Service staff is yours to utilize. Just advise the nearest General Chemical office when you need such assistance.

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GC

FOR AMERICAN INDUSTRY

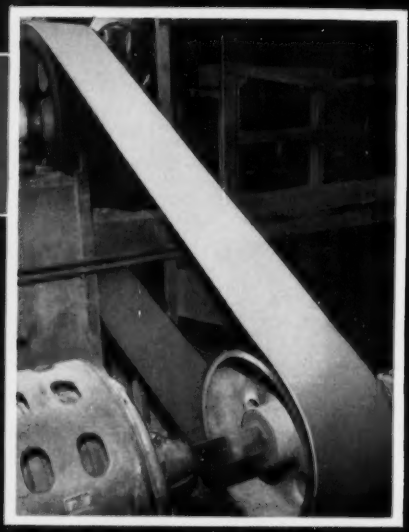
GENERAL CHEMICAL DIVISION

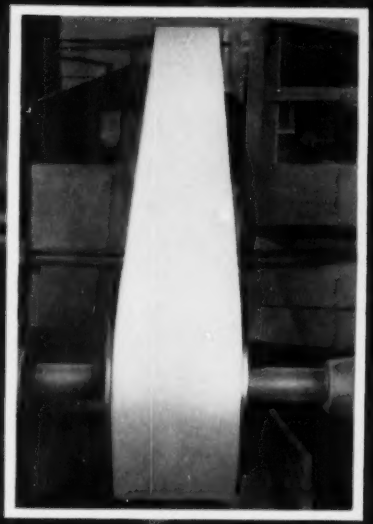
ALLIED CHEMICAL & DYE CORPORATION

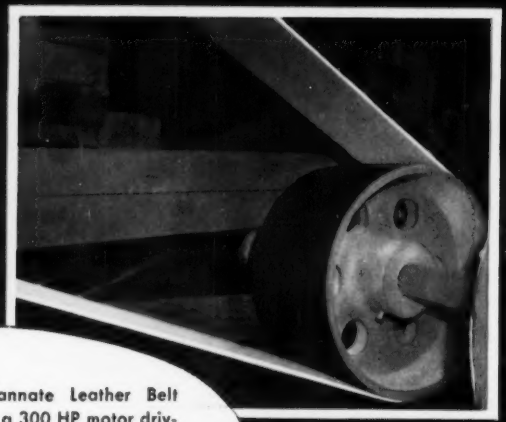
40 Rector Street, New York 6, N. Y.

OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

in this well-known
PAPER MILL...







This 20" four-ply Rhoads Tannate Leather Belt (39 4/12' Long)—installed on a 300 HP motor driving an 88" ten knife chipper—runs 5860 feet per minute and has been giving satisfactory service for more than 2 years.

Let us tell you why Tannate is chosen for such service!

HYDRAULIC PACKINGS
AND OTHER MECHANICAL
LEATHER PRODUCTS

PRODUCERS OF FINE LEATHER FOR 247 YEARS

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Weyerhaeuser is in the business of growing trees . . . looking ahead to a continuous, never-ending supply of timber.

That is the reason a forest fire today is seen as more than an immediate loss. It is recognized also as a threat to the future well being not only of Weyerhaeuser and the Pacific Northwest but of other communities, and even the nation at large.

And that is why in cooperation with others in industry and government, Weyerhaeuser helps maintain a vast network of look-out towers, forest patrols, radio and telephone communications, tank trucks and roads. Trained fire-fighters are always available. Forest fire prevention today and tomorrow is in the public interest for the present and the future.

PULP DIVISION

WEYERHAEUSER

A Magic Carpet...for You!
The Elof Hansson organization maintains offices in:
Gothenburg
London
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Bombay
Shanghai
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Capetown
and representatives in all key cities throughout the world!
This international organization serves as a magic carpet in bringing buyers and sellers of paper and woodpulp together quickly and profitably. Our intimate world-wide affiliations—branch offices and personal representatives—are your contact with all markets. As importers and exporters of paper and woodpulp, Elof Hansson, Inc. is staffed to serve you efficiently regardless of where you are located. May we tell you more about our facilities and what they can mean to you?
ELOF HANSSON, INC.
220 EAST 42ND STREET
NEW YORK 17, N. Y.

THE MEAD SALES COMPANY
230 PARK AVENUE, NEW YORK 17, N. Y.
20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

In "The Year of the Two Winters," the shadows of his lumberjacks froze so hard to the snow that Paul Bunyan spent most of his time prying them loose with his pike pole.

A reproduction of this incident from the fabulous life of Paul Bunyan—the thirty-ninth of a series—will be sent on request. It will contain no advertising.

A RESEARCH CORPORATION COTTRELL

will save you $1000 to $1500 worth of salt cake every day

The engineer from Research Corporation spoke confidently. He had studied the equipment layout, and noted that the mill had a capacity of 1,000 tons of pulp per day. From his experience and specialized knowledge he knew that he could safely anticipate a minimum recovery of 100 pounds of salt cake for each ton of pulp produced—total: 50 tons of salt cake per day—value: $1,000.00 to $1,500.00 per day dependent upon salt cake cost prevailing at the plant.

Performance like this is the result of over 35 years of experience combined with careful engineering appraisal, attention to details and a remarkably efficient method. These, plus equipment which gives recoveries of 90 to 99%, are responsible for outstanding records of recovery.

If you are losing your chemicals through the stack in a soda or sulphate mill investigate the Research Corporation Precipitator.

RC-108

Research Corporation Installations

47 CARBON BLACK PLANTS
200 METALLURGICAL INSTALLATIONS
203 ACID PLANTS • 34 PAPER MILLS
262 DETARRING INSTALLATIONS
195 POWER STATIONS
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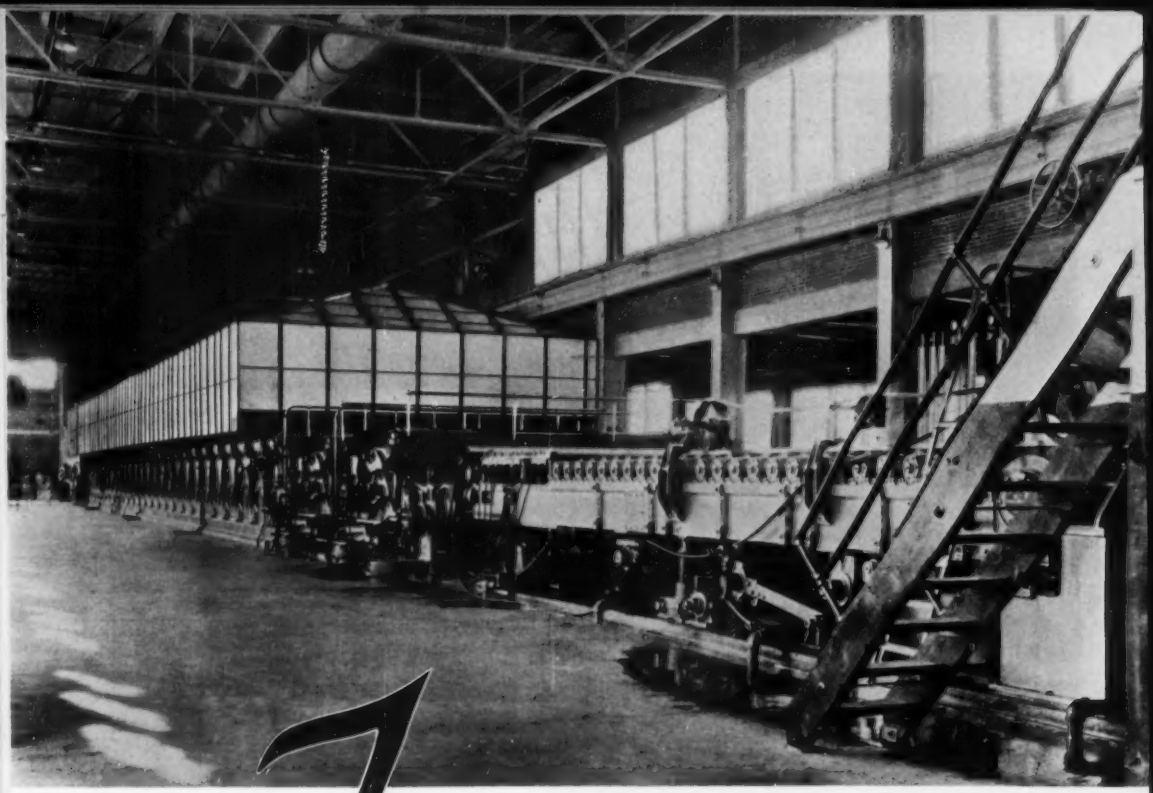
AND MISCELLANEOUS INSTALLATIONS

RESEARCH CORPORATION

405 Lexington Avenue, New York 17, N. Y.
122 South Michigan Avenue, Chicago 3, Illinois



THIS is just one of many Bagley and Sewall Paper Machines that are producing tons and tons of paper in every section of the globe . . . every kind of paper — kraft, tissue, news, board, bond, book, etcetera, etcetera. Bagley and Sewall Machines have been in operation since 1889, and a number of those first machines are still producing paper.

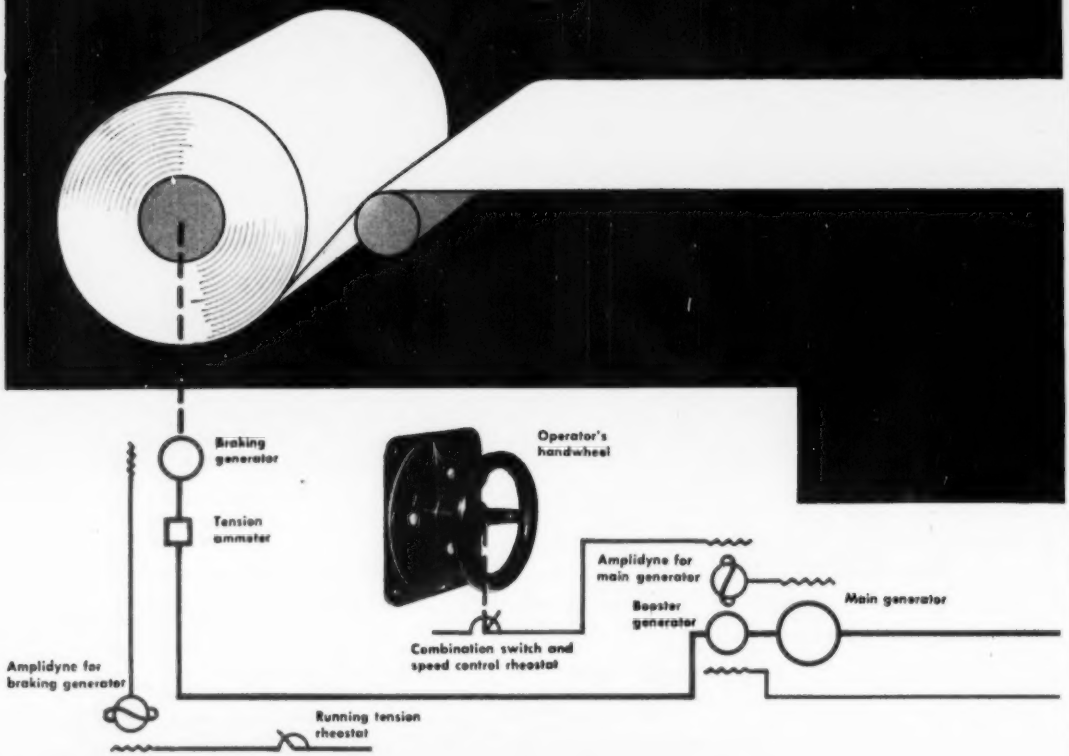
Bagley and Sewall Machines are built to produce paper efficiently, economically . . . and for years. Over the years we have originated many new practices for more efficient paper production and kept pace with the proven ideas of modern paper machine design.

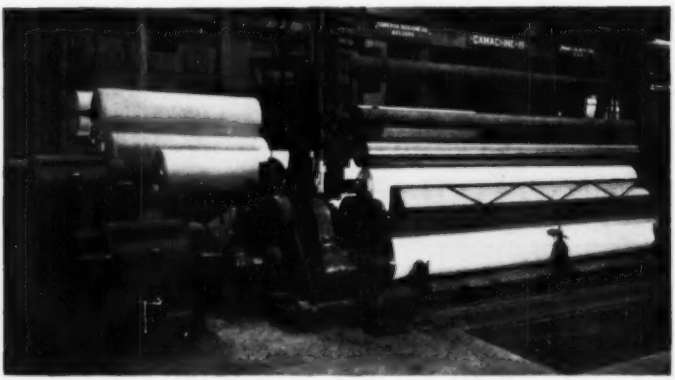
When new paper making equipment for your mill is in the "elementary thinking stage," call us in. Our engineers will gladly work with you in the development of your ideas for better, more efficient paper production.

BAGLEY & SEWALL

WATERTOWN, NEW YORK
BUILDERS OF PAPER MAKING MACHINERY

Faster Winding-AND EVERY



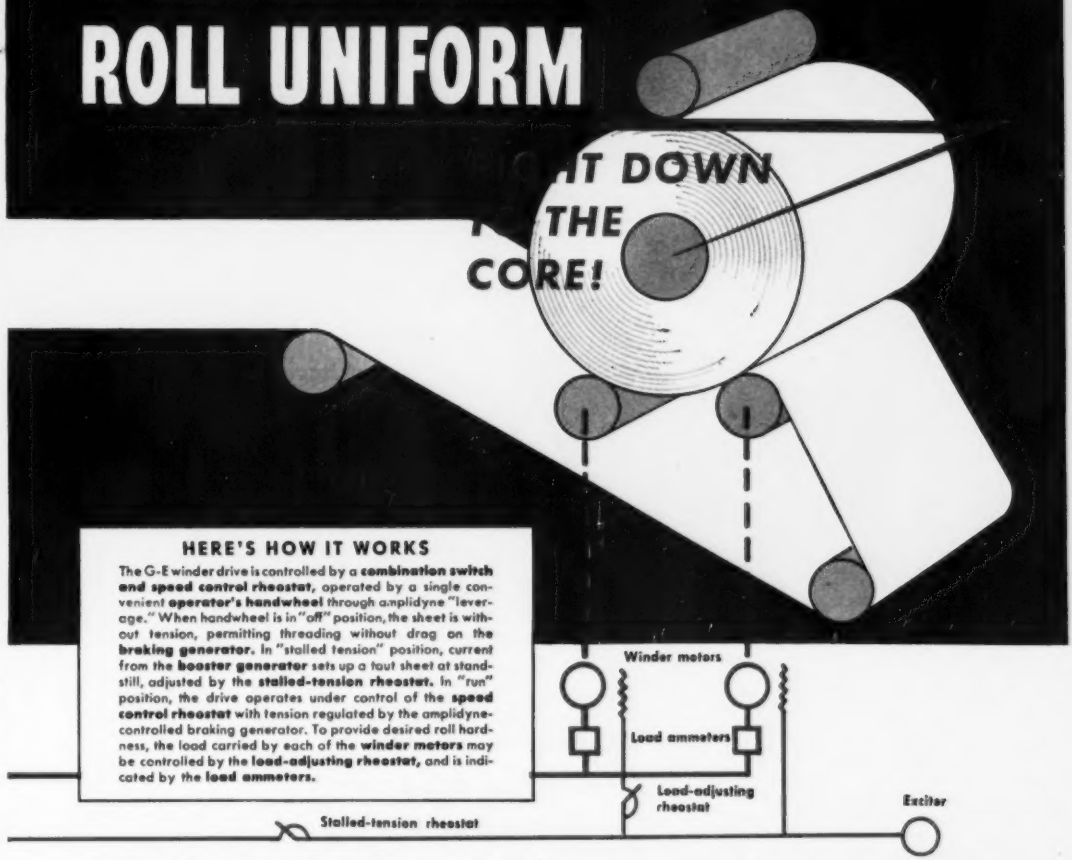


Accurate control of speed and tension by means of a two-motor G-E winder drive help keep quality and production high in this Eastern paper mill.

PAPER MILL DRIVES

—TO HELP YOU MODERNIZE FOR FASTER, LOWER-COST PAPER-MAKING!

ROLL UNIFORM


T DOWN
THE
CORE!
HERE'S HOW IT WORKS
The G-E winder drive is controlled by a **combination switch and speed control rheostat,** operated by a single convenient **operator's handwheel** through amplidyne "leverage." When handwheel is in "off" position, the sheet is without tension, permitting threading without drag on the **braking generator.** In "stalled tension" position, current from the **booster generator** sets up a taut sheet at standstill, adjusted by the **stalled-tension rheostat.** In "run" position, the drive operates under control of the **speed control rheostat** with tension regulated by the amplidyne-controlled braking generator. To provide desired roll hardness, the load carried by each of the **winder motors** may be controlled by the **load-adjusting rheostat,** and is indicated by the **load ammeters.**
Winder motors
Load ammeters
Load-adjusting rheostat
Exciter
Stalled-tension rheostat

General Electric Winder Drives give you accurate control of speed and tension for smooth, even-density winding — more rolls per day!

Amplidyne-controlled, these modern General Electric winder drives provide the "musts" for fast, even winding—smooth speed changes, rapid acceleration and deceleration, and a wide range of speeds.

You wind more rolls per day with a G-E winder drive because running speeds are boosted, non-productive splicing time is cut and you stop faster, resume running speed faster. Threading, too, is quicker and easier.

You wind uniformly hard or soft rolls as desired. Smoother speed changes mean fewer winder tears during threading or accelerating. And there's no damage to finish, formation, or caliper of the paper.

For extra ease of operation, a single handwheel gives you complete command of the winder at all times—for stalled tension, starting, running, stopping, jogging, or threading.

It's up to you. If you're thinking of speeding up your winders to keep pace with today's faster paper machines, call in a G-E sales engineer. He'll gladly go into details on modernizing your present drives. Meanwhile, write today for your copy of a new bulletin "Winder Drives for Paper Mills," GEA-5190. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

660-1

There could not be a finer Chest than this -

One of the Many Uses for

KALAMAZOO Glazed Tile

Here is a Kalamazoo Glazed Tile chest in process of construction. It is built of smooth, Kalamazoo Glazed tile with a solid, reinforced concrete core and designed for the installation of deckers on top.

Tanks can be made to any design with sloping floors and rounded corners. The ideal material for stock tanks or chests because of its permanent, long-lasting, easy-to-keep-clean surface. Far superior to concrete because there is no chipping or flaking. Standard construction in most modern paper mills.

KALAMAZOO TANK & SILO CO.

K A L A M A Z O O 1 6 , M I C H .

HYCAR AMERICAN RUBBER LATEX...
a new material for paper impregnation

HYCAR latex, when used as an impregnant for even inexpensive papers, imparts to the papers many desirable properties not readily obtainable with other impregnations.

Tear and wet strength are very considerably increased. Resistance to oils, chemicals, aging, and flexing are added in very desirable degrees. HYCAR-impregnated papers may then be coated with any one of a number of coating materials to impart additional properties.

Potential applications for papers of this sort range from gaskets to leather replacement materials, shelf paper to floor coverings, wallpaper to insoles.

HYCAR latex is very easy to use. No vulcanization is required. Normal drying times are used. And in latex form HYCAR is an inherently safe material to handle. No solvent system is needed even when HYCAR latex is used as a coating material.

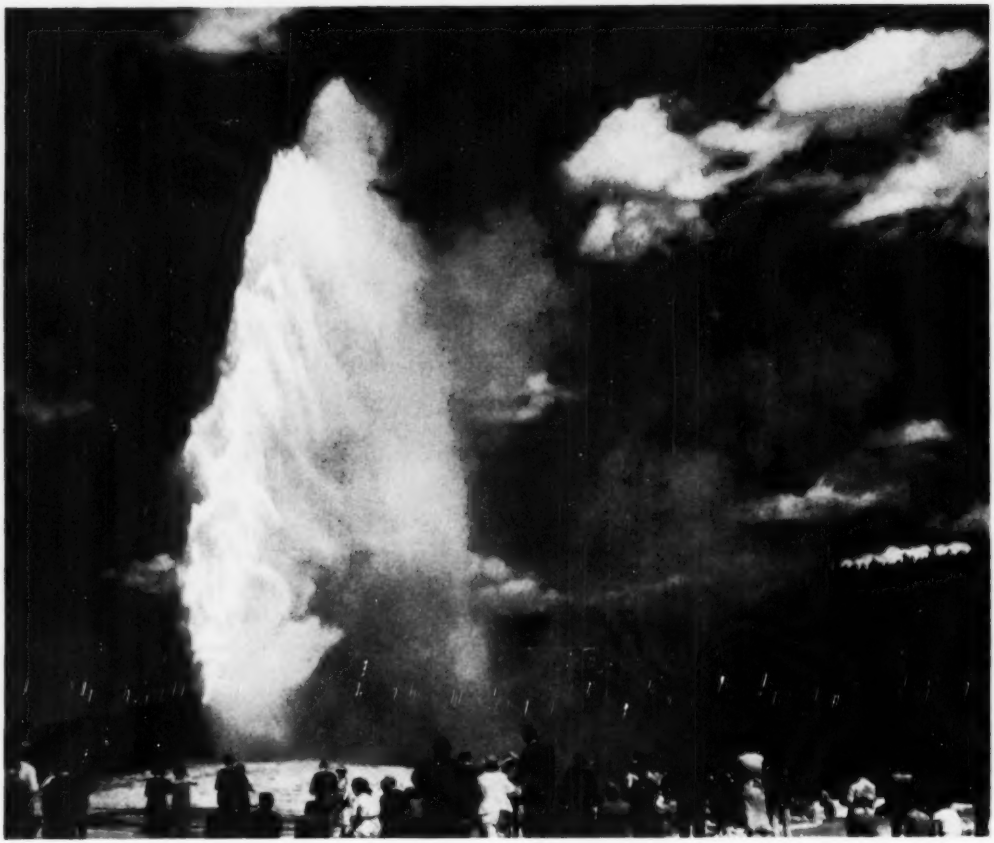
We would be glad to work with you on any problems relating to the use of HYCAR latex. For more information, please write Department HH-2, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

Hycar
Reg. U. S. Pat. Off.
American Rubber

B. F. Goodrich Chemical Company
A DIVISION OF THE B. F. GOODRICH COMPANY

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE brand chemicals and plasticizers

HIGH WHITENESS



Fine coated paper, too, reflects light to give an appearance of almost perfect whiteness. When the paper-coating pigment is Wyandotte Precipitated Calcium Carbonate, this quality of "high whiteness" is assured.

Wyandotte Precipitated Calcium Carbonate offers many such advantages to the coated-paper manufacturer. It is high in opacity and covering power . . . free of grit and all other abrasive materials. It is readily and easily dispersible in water and has that uniformity which is so essential to machine coating. It is not excessive in adhesive demand.

For economical *quality* coating, you can rely on this truly fine chemical. Write today for complete data.

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WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

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Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine • Hydrogen • Dry Ice • Synthetic Detergents
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cut
PAPER
with

cut
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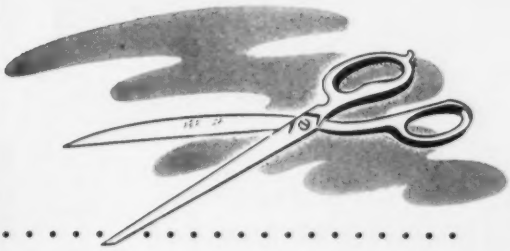

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FLOTATION
SAVEALL

Sveen Pedersen Flotation Saveall cuts mill waste more effectively than the conventional type savealls. Its flotation action recovers more fibers and fillers; water is clarified to such a high degree of purity that it can be extensively re-used in the system. Sveen Pedersen greatly reduces fresh water and fuel consumption, and virtually eliminates stream improvement problems.

save FIBER, FUEL WATER, CHEMICALS

solve STREAM PURIFICATION PROBLEMS

Other Advantages of Sveen Pedersen

Low maintenance cost • Rapid Circulation through the System • High Efficiency on Heavily Loaded Stock • Insensitivity to Ordinary Fluctuation in White Water Flow • Ease of Cleaning

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TO ALL OWNERS AND OPERATORS OF *Camachine* MILL TYPE WINDERS

PNEUMATIC PRESSURE CONTROL

a Spectacular Improvement

IN CUTTER WHEEL PERFORMANCE

is now available for application to all existing mill type Camachines, both standard and narrow width. This cutter unit has also been adopted as standard on all new Camachine mill type winders (models 14, 18, 19 and 20).

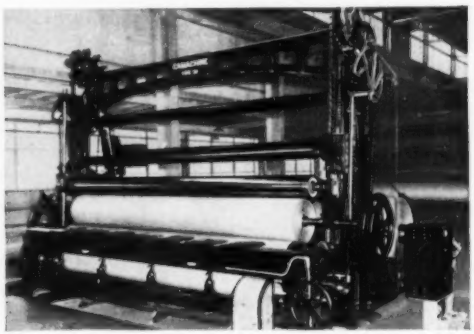
HERE'S WHAT IT DOES: With the new Camachine Pneumatic Cutter Units, uniform pressure is maintained on the complete set of cutter wheels, regardless of how many units are operated at the same time, and regardless of variations in the diameters of the cutter wheels. Also, the pressure is set and controlled at one point for the entire line, eliminating the need for individual adjustment of each cutter unit.

Pneumatic pressure control eliminates the danger of applying excess pressure on the individual unit—a fault which, on old-style spring-loaded cutters, often resulted in excess wear on the cutter wheels and costly downtime due to spring breakages.

Pressure on the entire line is controlled through a hand-operated valve. Changes of pressure to accommodate different thicknesses of paper or paperboard can be made instantly through a simple turn of the valve. In the event of a web break the cutter wheel pressure is released at once.

The Camachine Pneumatic Cutter Unit is one of several important post-war improvements which are offered as standard equipment on all new mill type Camachines. The extensive engineering, research and manufacturing facilities of the Cameron Machine Company are devoted exclusively to producing the world's most efficient slitting and roll-winding equipment.

BELOW: Camachine 20. Speeds up to 5000 fpm on newsprint.



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the
TREND
is
to
AUTOMATIC
EMULSIFYING
A significant advance in rosin size technology is the development of the new Hercules Automatic Emulsifying Process.* Completely automatic, it converts Hercules Paste Rosin Size into a dilute emulsion. The new process saves considerable labor, eliminates the necessity for large storage tanks, requires a minimum of space. Easy to install, it also permits the use of certain types of sizes which could not previously be used because of inadequate emulsion stability. Many mills are adapting this process to their papermaking economy. Write for our new booklet.
HERCULES POWDER COMPANY
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SIZING MATERIALS AND CHEMICALS FOR PAPER
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*PATENT APPLIED FOR

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When specific opacity and brightness are required in paper, you can depend on TITANOX-A-WD to impart the essential qualities. This water-dispersible anatase titanium dioxide helps make for fine appearance, clear printing and vivid pictures.

boosts opacity of

For example, only 2% of TITANOX-A-WD in the paper through beater addition raises the opacity from 85% (unpigmented) to 90.5%, while 4% raises opacity to 93.5%.

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We will be glad to discuss with you the use of this pigment for improving your paper products. Call or write our nearest office. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 So. Michigan Ave., Chicago 3, Ill.; 2600 So. Eastern Ave., Los Angeles 22, Calif. Branches in all other principal cities.

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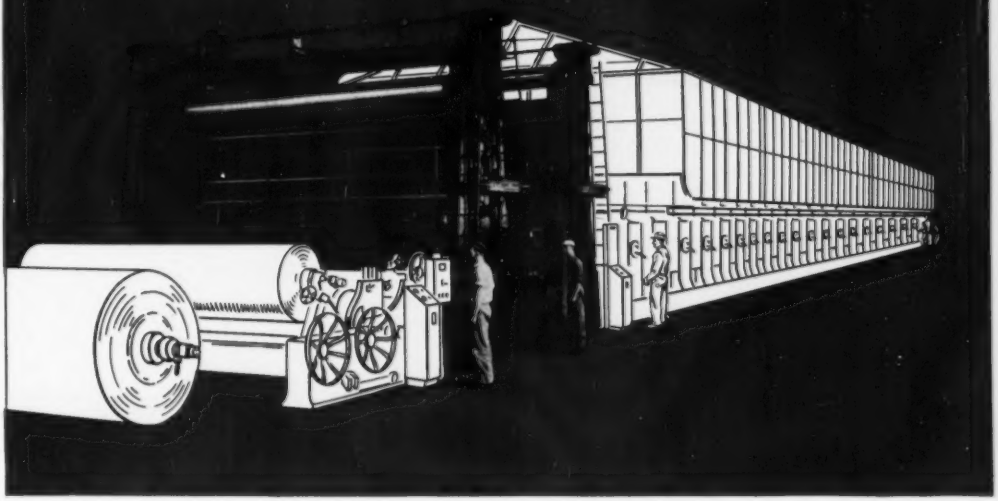
BUILT TO GIVE A UNIFORM FINISH . . .

at 2000 feet per minute



The two 8-high calender stacks, built by Farrel-Birmingham for Florida Pulp & Paper Company at Pensacola, Florida, are designed to impart a uniform finish to Kraft at the unusually high speed of 2000 feet per minute.

Farrel-Birmingham calenders are made in any size up to 312-inch face length. They are equipped with heavy box-type housings, water-cooled journal boxes, automatic lubrication, floor-operated lift, and other modern features.

The chilled iron rolls are accurately cast, machined, and then ground to a mirror-like finish.

When you need calenders or calender rolls, call Farrel. Complete information and engineering help are available to you, without obligation.

FARREL-BIRMINGHAM COMPANY, INC.

ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn.; Buffalo, N. Y.

Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Chicago, Los Angeles, Tulsa, Houston

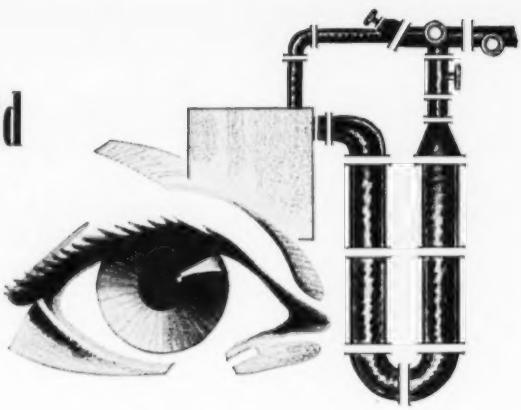
The correct amount and shape of crown, required for bottom and next-to-bottom rolls, are produced with unerring accuracy. Rolls not requiring crown are made round and straight to tolerances as close as a quarter of a thousandth inch.

To quote one mill executive, this book is "a splendid guide every mill should have and follow." Contains 32 pages of useful, helpful information telling how to avoid calender and calender roll trouble, and how to regrind rolls properly. Written in easy-to-follow style, it provides a sure cure for most calender and roll grinding "headaches." Information applies to any make of roll, roll grinder or stack.

If you do not already have a copy, write for one today. No charge, no obligation.

Farrel-Birmingham

Removing the Blindfold from Pulp Chlorination...



Visual inspection of the chlorination stage through sight glasses in the stock pipe leading from the chlorinator and another after the bleacher is approved practice today. But back in 1931 when the first Hooker continuous chlorination system was designed to overcome the disadvantages of a batch process, no provisions for visual inspection of the stock were included. Redesigning the equipment to provide for adequate sight glasses was another development made cooperatively by engineers of the pulp and paper industry and the Hooker Technical Staff.

To Hooker, even the little things such as incorporation of sight glasses and other improvements in the design and construction of equipment were and still are a matter of continued concern. That's why it wasn't long before equipment for continuous chlorination of wood pulp was available with a capacity of 200 tons per day. The first of these larger capacity chlorinators was installed at Moss Point, Mississippi, and was soon followed by many more installations of varying capacities.

Through cooperation of this sort with pulp and paper makers and through a policy of supplying consistently uniform chlorine, caustic soda and other chemicals, Hooker continues to help in the progress of the pulp and paper industry. Results of Hooker research and engineering developments for the pulp and paper industry are also available in printed form.

● A list of this helpful literature and copies of those in which you may be interested will be sent you when requested on your letterhead.

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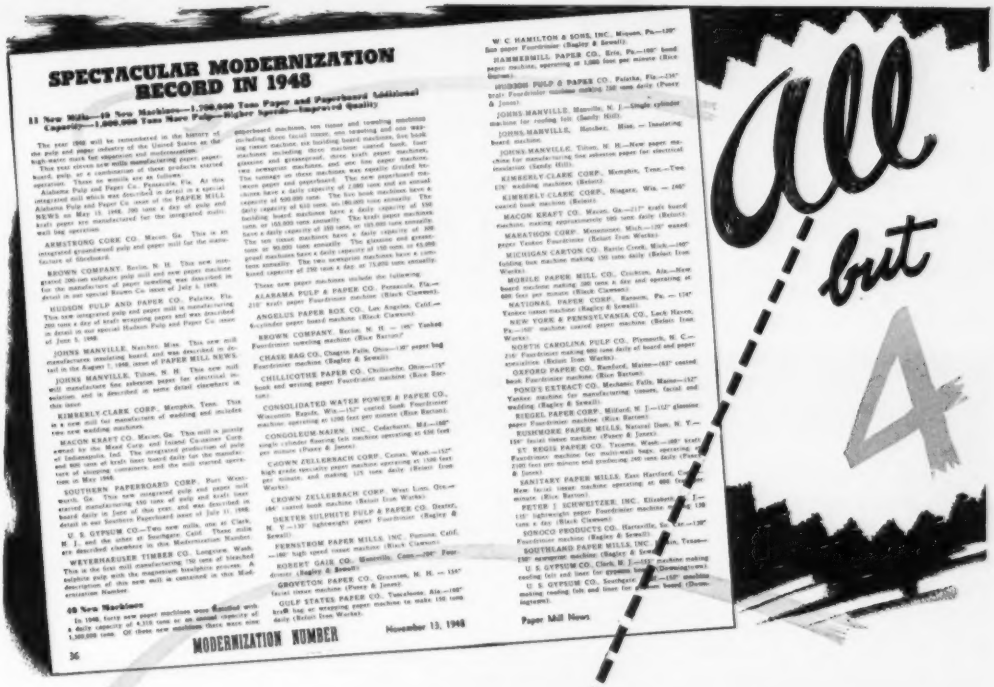
HOOKER CHEMICALS

HOOKER ELECTROCHEMICAL COMPANY
6 UNION STREET, NIAGARA FALLS, N. Y.
New York, N.Y. Wilmington, Calif. Tacoma, Wash.

Caustic Soda Muriatic Acid Sodium Sulfide Paradichlorbenzene Chlorine Sodium Sulfhydrate


SPECTACULAR MODERNIZATION RECORD IN 1948
11 New Mills—40 New Machines—1,700,000 Tons Paper and Paperboard Additional Capacity!—1,000,000 Tons More Pulp—Higher Speeds—Improved Quality
MODERNIZATION NUMBER
November 13, 1948
Paper Mill News
All but 4

are equipped with ROSS Air Systems

During the year which saw the industry's high water mark for expansion and modernization, 36 of the 40 new machines installed were equipped with ROSS Air Systems to insure maximum operating efficiency. Plans are well under way for similar equipment in new mills to be built in 1949. Year after year, the records showing new and modernized machines continue to bear out the fact that fully 90% of the industry's mills are users of ROSS Systems.

ROSS SYSTEMS

J. O. ROSS ENGINEERING CORPORATION

MANUFACTURERS OF AIR PROCESSING SYSTEMS

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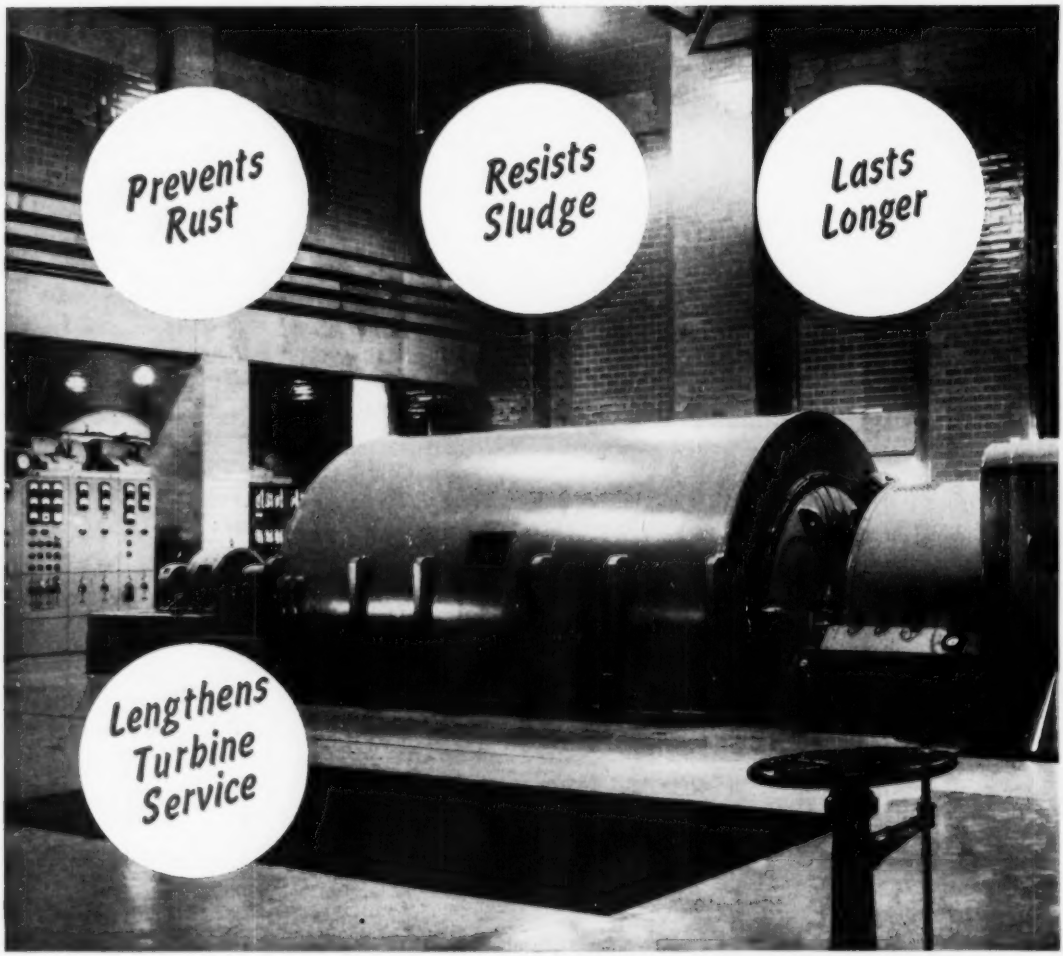
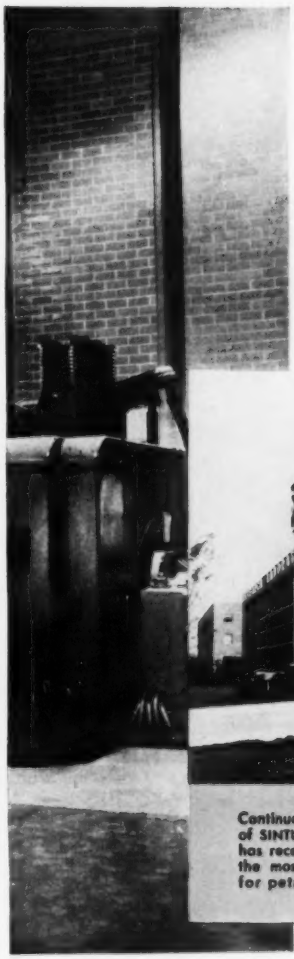
Sinturlite Oils Retard Uninterrupted



SINCLAIR

YOUR NEAREST SINCLAIR AGENT WILL GLADLY ARRANGE

Oxidation To Give Steam Turbine Service



One of the problems in steam turbine operation is the build-up of acidity in the lubricant due to oxidation. This causes harmful sludge to clog passages and impair the proper functioning of the governor.

This problem is solved when Sinclair SINTURLITE OILS are used. SINTURLITE OILS are fortified to resist oxidation and resultant acidity, retarding the formation of sludge. Other additives protect against rusting. The system is always clean, including the oil lines, bearing clearances and intricate governor mechanism. Try Sinclair SINTURLITE OILS.

Continual research explains the high quality of SINTURLITE and other Sinclair Oils. Sinclair has recently completed at Harvey, Ill., one of the most modern and complete laboratories for petroleum research and development.

E. W. Isom, Sinclair Vice-President in Charge of Research says: "With the new facilities now made available to us at Harvey, Ill., we expect to find many ways to help industry cut costs through better petroleum products."

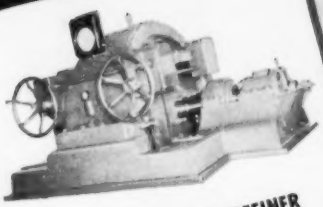
INDUSTRIAL OILS

FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVE., NEW YORK 20, N. Y.

for STOCK PREPARATION

JONES JORDANS

Ruggedly and accurately made, insuring continued fine performance with ease of control and simple maintenance.

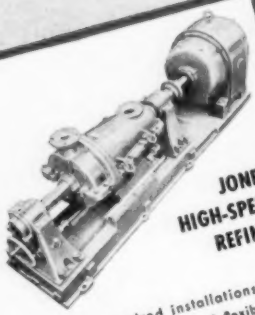


JONES DOUBLE-DISC REFINER

A high capacity machine with greater output per unit.

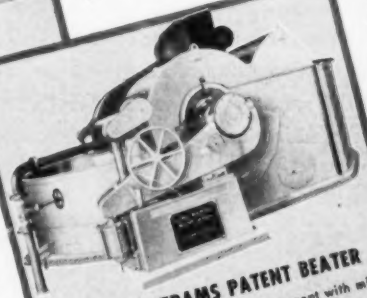
LIEBECK DISINTEGRATOR

A versatile machine for pulping broke and pulp. Can be fitted into unusual mill locations.



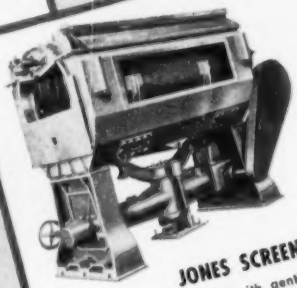
JONES HIGH-SPEED REFINER

Several hundred installations have proved the efficiency and flexibility of this famous machine.



JONES-BERTRAMS PATENT BEATER

The best for maximum fibre development with minimum power consumption.



JONES SCREEN

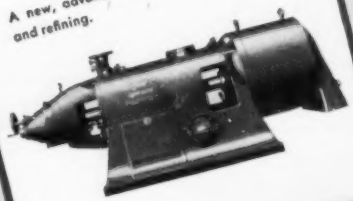
Efficient cleaning of stock with gentle action and ease of operation.

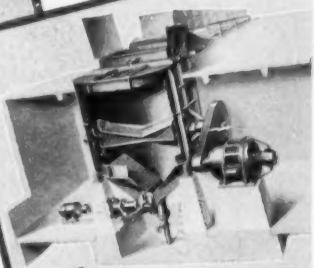
JONES AGITATOR

"Packaged" units—simplified and efficient—with ease of installation and low maintenance.

JONES COMPOSITE

A new, advanced design unit for beating and refining.





JONES PULPMASTER

The advanced pulper with two-stage action combining refining with pulping.

Descriptive Bulletins, detailed information, and quotations furnished for the asking.

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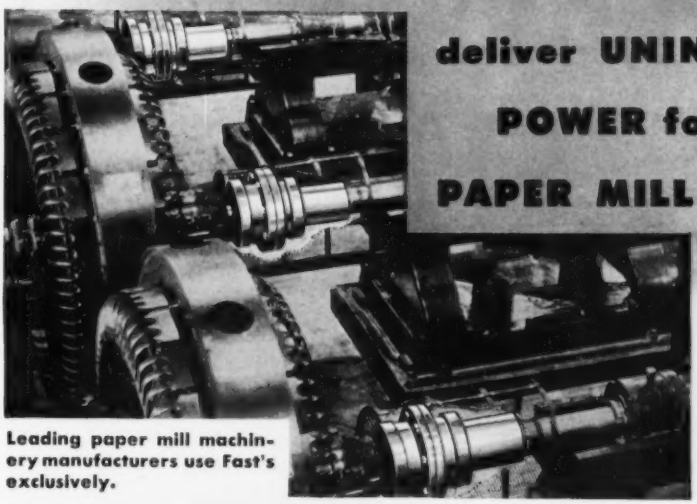
E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.
Builders of Quality Machinery for Paper Mills

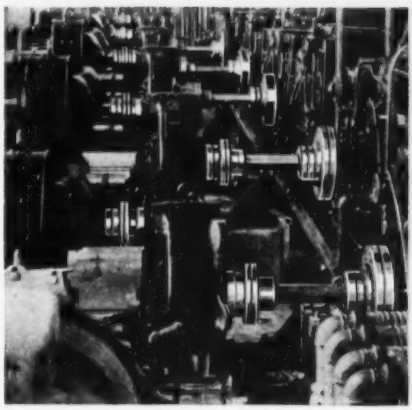
MANUFACTURERS AND DISTRIBUTORS IN CANADA: WATEROUS LTD., BRANTFORD, ONT.

Here's How FAST'S COUPLINGS deliver UNINTERRUPTED POWER for all your PAPER MILL EQUIPMENT



Leading paper mill machinery manufacturers use Fast's exclusively.

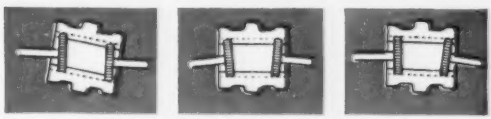
FOR JORDAN ADJUSTMENTS: Fast's Jordan-Type Couplings reduce wear on bearings, prolong life of motor and Jordan. Because Fast's splines are always meshed in oil, plug adjustment is smooth and certain. No worn spots can develop—customary "hard spot" is eliminated. Due to smooth torque and elimination of coupling vibration, Jordan life is increased and product discharged from Jordan is uniform.



AND FOR REMOTE DRIVES: Fast's Floating Shaft Couplings enable drives to be *set back* from paper machines without the use of supporting bearings. This eliminates additional bearings, does away with impossible task of keeping three or more bearings in line. It saves you installation cost, upkeep and bearing replacement. These Couplings have been in service since 1926!

NO MATTER what your mill coupling problem may be, there's a Fast's made to solve it and give you longer machine life, lower upkeep costs and minimum shutdown losses. For absolute dependability, specify these original gear-type couplings with *exclusive* "rocking bearing." The *only* coupling which provides a *positive* metal-to-metal seal that keeps moisture, dust and grit *on the outside!*

This exclusive "rocking bearing" is also *correctly engineered* to allow freedom of movement to compensate for misalignment because *spherical* base has *same axis* as the hub spline faces. And Fast's Couplings give you the benefits of years of top engineering experience and unexcelled service, including available parts if required by change of drive, *even if your Fast's have been running for 30 years.* Get full information—check the coupon and mail today to: Koppers Co., Inc., Fast's Coupling Dept., 232 Scott Street, Baltimore 3, Md.



Compensate for All Misalignment

The floating sleeve takes a neutral position. All forms of misalignment are compensated for between the lubricated faces of the splines, equally divided between driving and driven members. The entire assembly revolves as one unit. The above exaggerated diagrams demonstrate Fast's principle.

FAST'S KOPPERS
Self-Aligning
COUPLINGS

SEND FOR FREE CATALOG!

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Please send me your illustrated, informative catalog, giving full information on the many types of Fast's Couplings.

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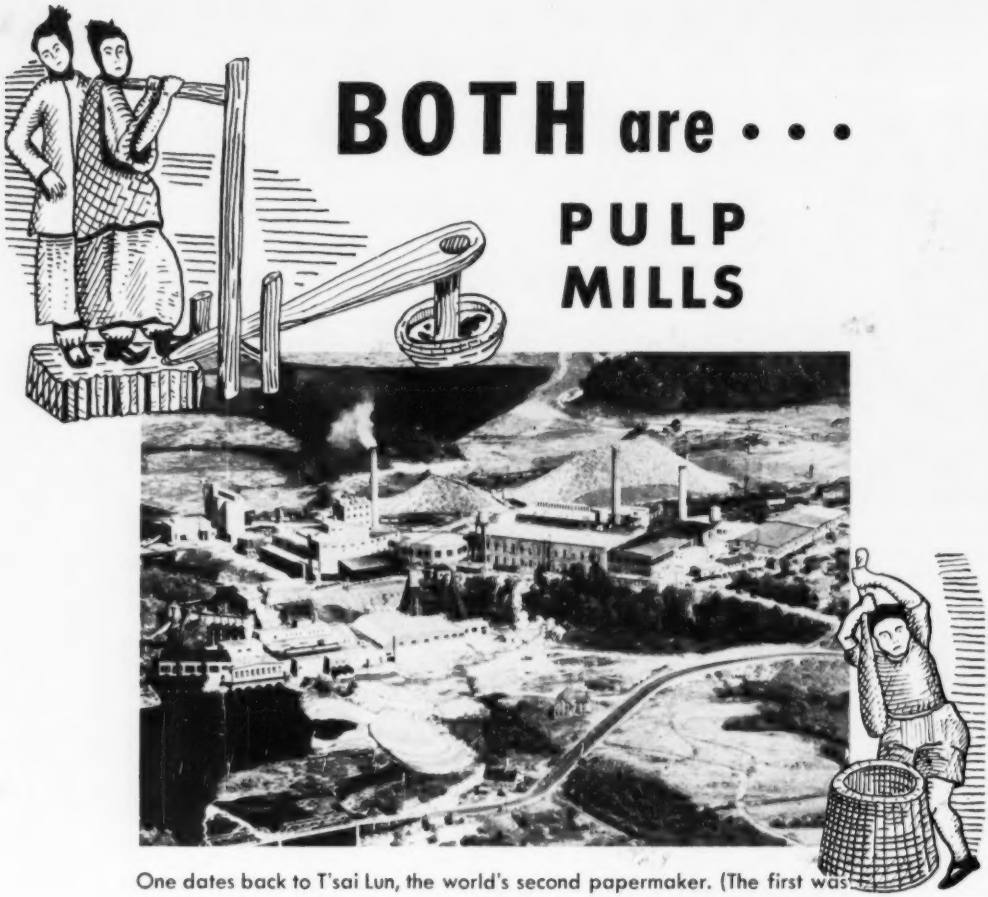
PULP MILLS



One dates back to T'sai Lun, the world's second papermaker. (The first was *Vespa maculata,* the hornet, or papermaking wasp.) The other is KVP's model new mill at Espanola, Ontario - the last word in sulphate pulp mill construction.

KVP often called *The World's Model Paper Mill,* is the parent organization of the following plants, specializing in

FOOD PROTECTION and HOUSEHOLD PAPERS

Kalamazoo Vegetable Parchment Co.
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Harvey Paper Products Co.
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Espanola, Ontario

Aridor Limited
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KVP

KALAMAZOO VEGETABLE PARCHMENT COMPANY
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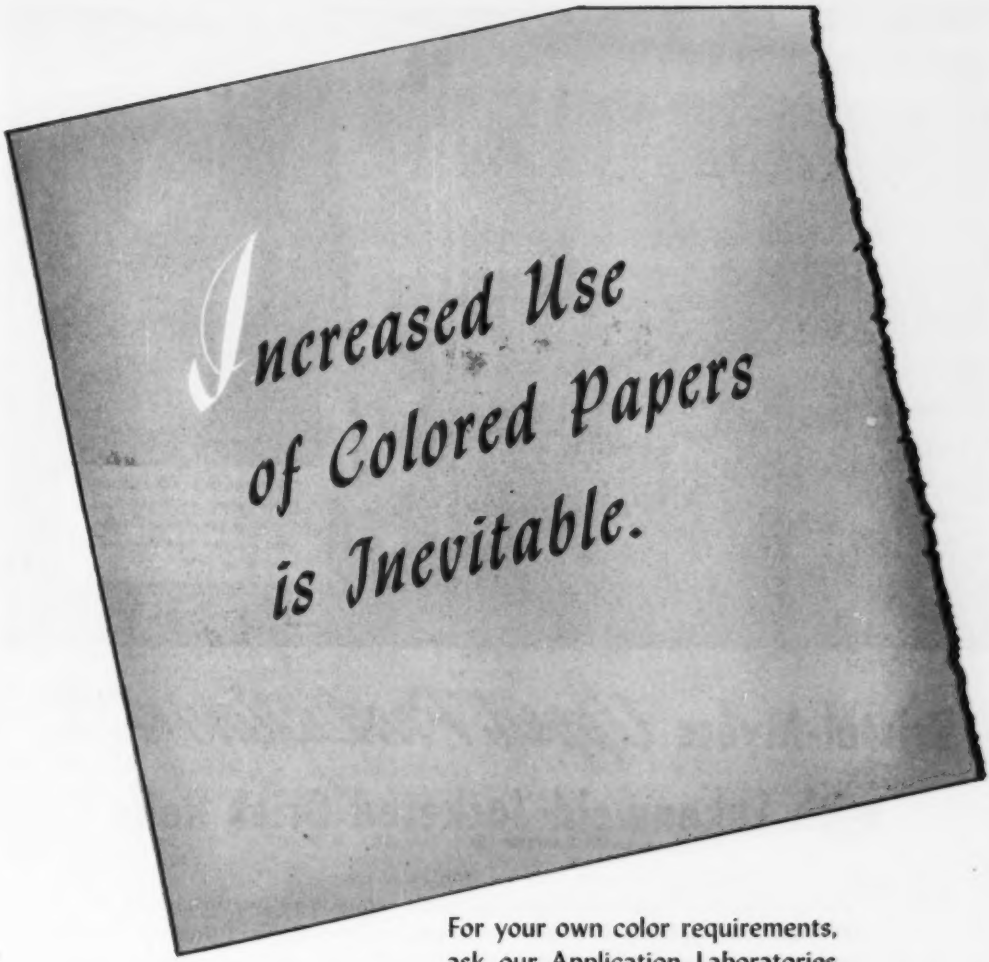

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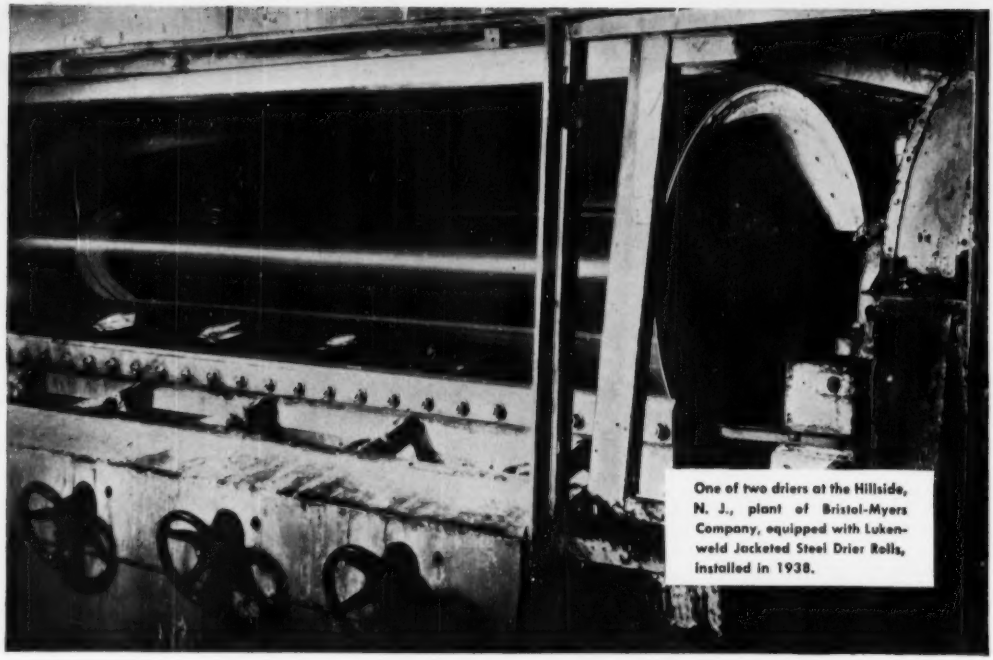


One of two driers at the Hillside, N. J., plant of Bristol-Myers Company, equipped with Lukenweld Jacketed Steel Drier Rolls, installed in 1938.

Bristol-Myers *Upped Production 41%* with Lukenweld Jacketed Drier Rolls

PATENTS APPLIED FOR

200 pounds of dried, flaked material every 7 to 8 minutes instead of the 10 to 11 minutes formerly required! That's how much Bristol-Myers stepped up output from these machines simply by replacing drum-type rolls of different material with Lukenweld Jacketed Steel Drier Rolls —an average increase of 41%.

No other changes were made. The increased production was entirely due to the increased drying rate and positive method of condensate removal of rolls of Lukenweld design and steel plate construction. Had steam pressure been increased above the 80 psi used in both old and new rolls, the drying rate could have been further increased.

Reports from the Paper Industry show that Lukenweld Jacketed Steel Drier Rolls are similarly boosting production from existing machines, simply by installing them in place of old style rolls. New drier additions, designed and built by Lukenweld and employing Lukenweld Rolls, have further speeded up production while also maintaining high quality.

Bulletin 358 tells you about Lukenweld Jacketed Drier Rolls. For a copy, and for other drying help, write Lukenweld, Division of Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

We'll lend you "LUKENWELD", a 16mm motion picture with sound, highlighting our methods, facilities and products. Running time: 20 minutes. Write for booking date.

LUKENS
LUKENWELD DIVISION

LUKENWELD
DRIER ROLLS AND DRYING MACHINERY

A SUBSIDIARY OF RICE BARTON CORPORATION

RICE BARTON Research Corporation

WORCESTER 1, MASSACHUSETTS

With great pleasure we announce the formation of the Rice Barton Research Corporation, a wholly owned subsidiary of Rice Barton Corporation.

The purpose of this new organization is to conduct process and product research for the paper industry. Its further purpose is the sale and promotion of equipment which will be developed with its own resources and with the help of its many friends in the industry.

The initial step in this direction is a connection with Mr. Kurt Wandel, whereby the Rice Barton Research Corporation will further develop and sell machines basically designed by Mr. Wandel and known to the industry as "DynoMachines."

These machines - DynoPulpers, DynoFiners and DynoChests are operating most successfully in a number of mills throughout the country. Rice Barton Research Corporation is proud to have the exclusive sale and further development of this line of equipment.

In continuing advertisements we plan to bring to your attention the many advantages and achievements of these DynoMachines. We welcome your inquiries.

Charles Sumner Barton
President

RAY SMYTHE, West Coast Representative
501 Park Building, Portland 5, Oregon

Product and Process Research For the Paper Industry

PAPERMILL and WOODROOM EQUIPMENT

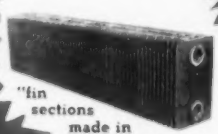
Here are some of the better known MURCO papermill and woodroom equipment that for years has successfully served the paper industry . . . each machine being improved year after year as operating conditions have demanded more and more production. Complete details on this equipment—or any other papermill and woodroom equipment that you may be planning—will be sent you upon request.

MURCO

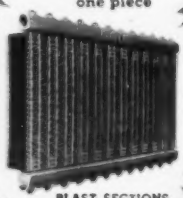
Backed by Over 60 years Experience!

GRID UNIT HEATER AND BLAST COILS

UNIT HEATER



"fin sections made in one piece



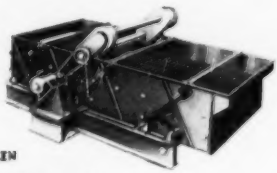
BLAST SECTIONS

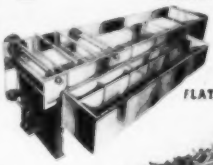
VERTICAL AXIAL FLOW AGITATOR

HORIZONTAL AXIAL FLOW AGITATOR

PULPWOOD CHIPPERS

LEVEL VIBRATING DOUBLE DECK CHIP SCREEN



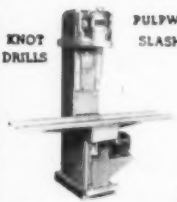


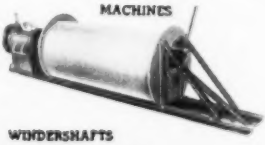
FLAT SCREEN

PULPWOOD SLASHERS

QUICK OPENING GATE VALVE

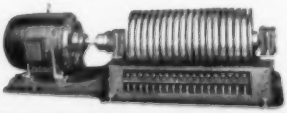
KNOT DRILLS



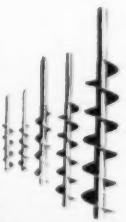


ROLL HEADING MACHINES

WINDERSHAFTS



CHIP CRUSHERS



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D. J. MURRAY MANUFACTURING CO.

Wausau — Wisconsin

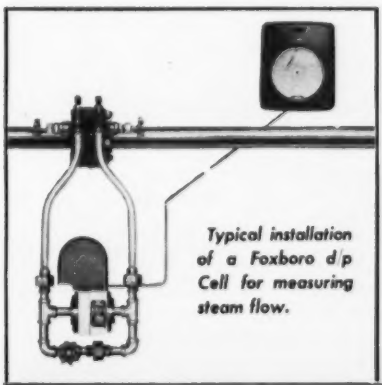
NEW!

Revolutionary

DIFFERENTIAL PRESSURE CELL

SIMPLIFIES MEASUREMENT OF STEAM FLOW

- *Positive, direct, force-balance operation.*
- *Zero displacement.*
- *No mercury used.*
- *Type 316 Stainless construction.*
- *1500 lb. operating pressure.*
- *Full overrange protection.*
- *Easy range change.*
- *Weatherproof.*



Typical installation of a Foxboro d/p Cell for measuring steam flow.

The new Foxboro d/p Cell is a flexible, easily-calibrated device operating on the highly accurate force-balance principle. *No mercury is used.* It transmits flow measurement to remote, conveniently-located pneumatic receiving instruments (indicating, recording, or controlling). It is small, weighs less than 20 lbs. . . .simple in construction. Absolute built-in overrange protection on both sides.

NO CONDENSING CHAMBERS NEEDED

Essentially zero displacement of the measuring element eliminates the need for condensing chambers. Because of its compact size, the d/p Cell can be installed close to the steam line . . . and the entire installation insulated where there is danger of lead line condensate freezing.

Learn all about this new, unique development. It may be the ideal solution to your measurement problem. Write for Bulletin 420. **The Foxboro Company, 68 Neponset Ave., Foxboro, Mass., U. S. A.**

FOXBORO
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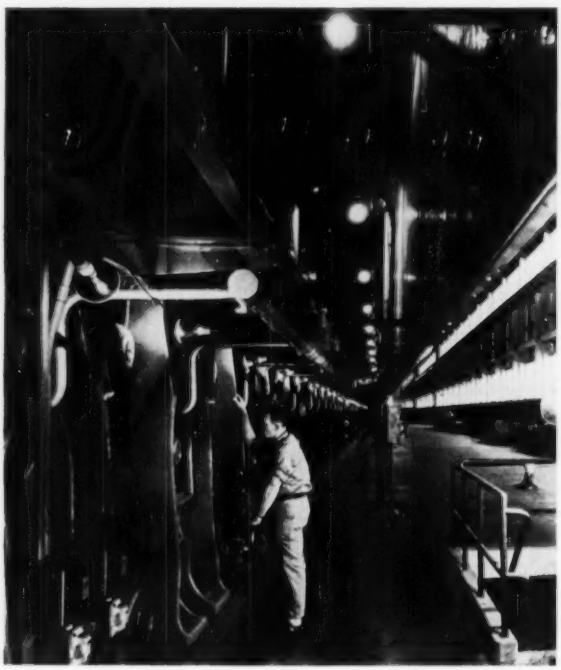
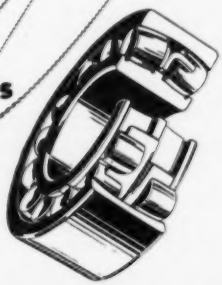
RECORDING · CONTROLLING · INDICATING
INSTRUMENTS

The PUSEY and JONES paper machine at ST. REGIS PAPER MILL that

rolls rolls rolls rolls rolls rolls rolls rolls rolls rolls rolls rolls



Pusey and Jones 180-inch Fourdrinier built for the St. Regis Paper Company.



ROLLS FASTER ON SKF BEARINGS

This new, Pusey & Jones 180-inch Fourdrinier machine is designed for 2100 feet per minute . . . and it operates continuously—on some 1,000 SKF Bearings . . . mostly SKF Spherical Roller Bearings.

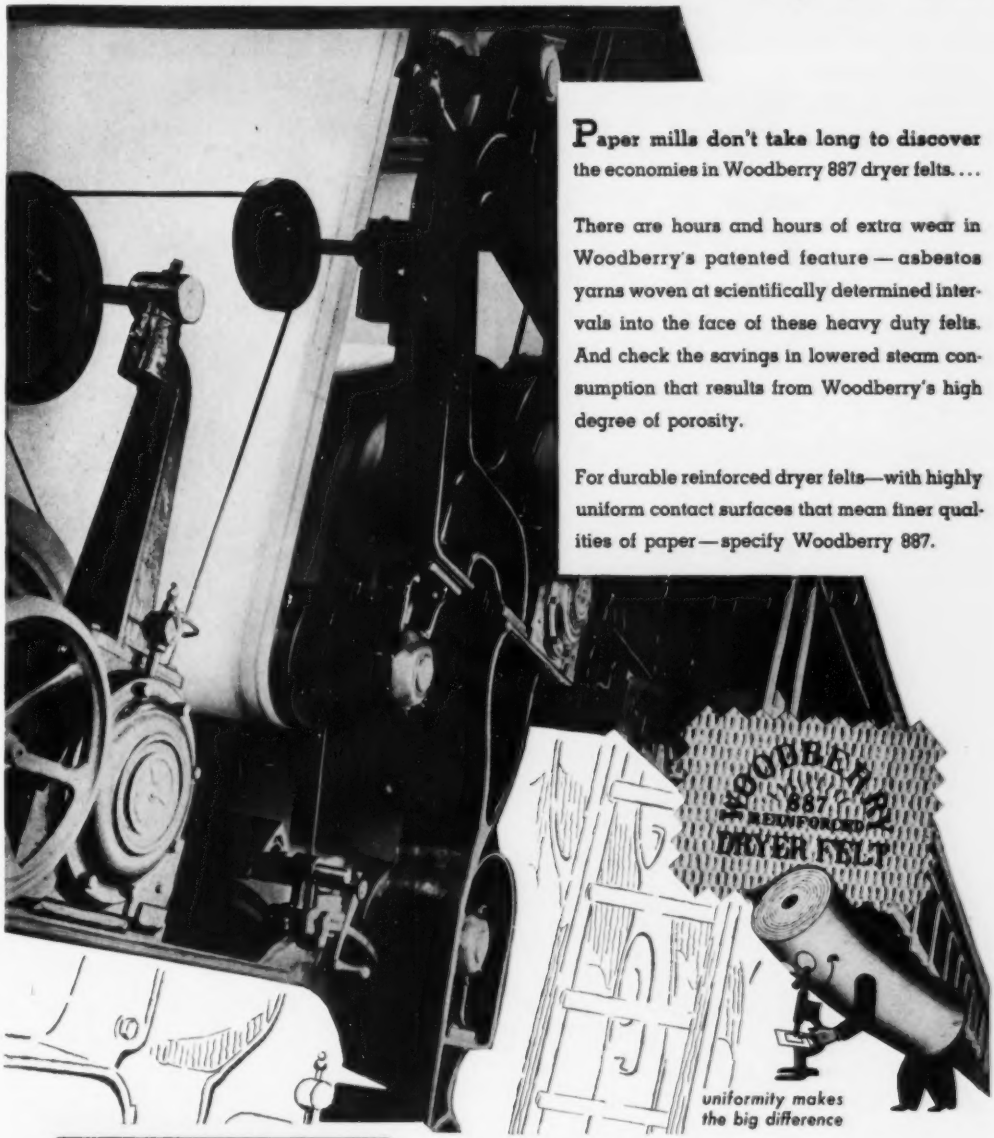
The drier section of this giant piece of equipment is smoothly driven by helical gears. Many of the larger journals are drilled for SKF's system of hydraulic removal of the bearings for speedy servicing —*should such removal ever be necessary.* On tending side in the drier end, housings are equipped with the SKF rocker mount, permitting expansion and contraction of the driers—with no lateral stresses on the side frames.

As pioneers of anti-friction bearing applications in the paper industry, SKF salutes the Pusey and Jones Corp. and the St. Regis Paper Company for this newest addition. SKF Industries, Inc., Philadelphia 32, Pa.

6563

PAPER EQUIPMENT BEARINGS ENGINEERED BY SKF

Savings Will Be Felt...
when you use Woodberry 887 Dryer Felts



Paper mills don't take long to discover the economies in Woodberry 887 dryer felts....

There are hours and hours of extra wear in Woodberry's patented feature — asbestos yarns woven at scientifically determined intervals into the face of these heavy duty felts. And check the savings in lowered steam consumption that results from Woodberry's high degree of porosity.

For durable reinforced dryer felts—with highly uniform contact surfaces that mean finer qualities of paper—specify Woodberry 887.

uniformity makes the big difference

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Selling Agents
40 WORTH ST. • NEW YORK

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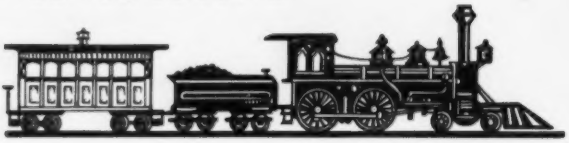
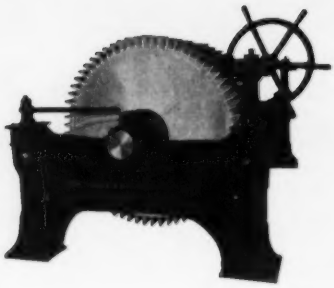




or THIS!

Controlled Flow VICTORY BEATER

It is obvious which roll is the most efficient and will give the greatest number of inch cuts per minute, reducing the beating cycle proportionately.

Then too, there are big power savings when a roll (mounted in a fixed position on roller bearings) has only one function—that of stock treatment—and is not required to mix and circulate stock around in a tub.

Multiple bedplates, hydraulically operated, provide the proper degree of pressure for any type of stock treatment desired.

The working edges of the roll and bedplate bars are kept in condition by a unique mechanism which oscillates the roll laterally on its axis, providing a continuous honing effect on the bars.

Write for folder No. PT 249

THE NOBLE & WOOD MACHINE CO.

HOOSICK FALLS, N. Y., U. S. A.

DU PONT REDS FOR PAPERS

Du Pont Brilliant Crocein FL Extra Conc.
Du Pont Congo Red
Du Pont Crocein Scarlet N Extra
Du Pont Fuchsine Conc. Powder
Du Pont Purpurine 4B Conc.
Du Pont Rhodamine B Extra
Du Pont Rhodamine 6GDN Extra
Du Pont Safranine T Extra Conc. 125%
Ha:ɔpont* Brilliant Pink 2B
Lithosol* Red CSP
Pontacyl* Carmine 2B
Pontacyl* Carmine 2G Conc. 150%
Pontacyl* Fast Red AS Extra Conc.
Pontacyl* Rubine R Extra Conc. 125%
Pontacyl* Ruby PL Extra Conc. 200%
Pontamine* Fast Pink EB Extra
Pontamine* Fast Red 8BL Conc. 125%
Pontamine* Fast Scarlet 4BS Conc. 150%
Pontamine* Red 12B Extra Conc. 200%

*REG. U. S. PAT. OFF.

What are your specific requirements as to shade . . . fastness . . . application method . . . furnish . . . cost? Whatever your problem may be, there's a Du Pont color which will suit your needs. Our Technical Staff is always ready to assist you. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

DU PONT

OUT OF DATE?

THIS wood pulp grinder has seen better days. But it's no more out-of-date than a modern magazine type grinder operating *without* automatic temperature control.

There are other variables besides grinding temperature in the operation of a wood pulp grinder. But there is none more important from the standpoint of production, power consumption per ton, stock uniformity, and stone cost.

We can speak freely about this because the first Automatic Grinder Temperature Control was developed by Taylor Instrument Companies sixteen years ago. Since then Taylor Automatic Grinder Control Systems have been in successful operation on all types and sizes of wood pulp grinders.

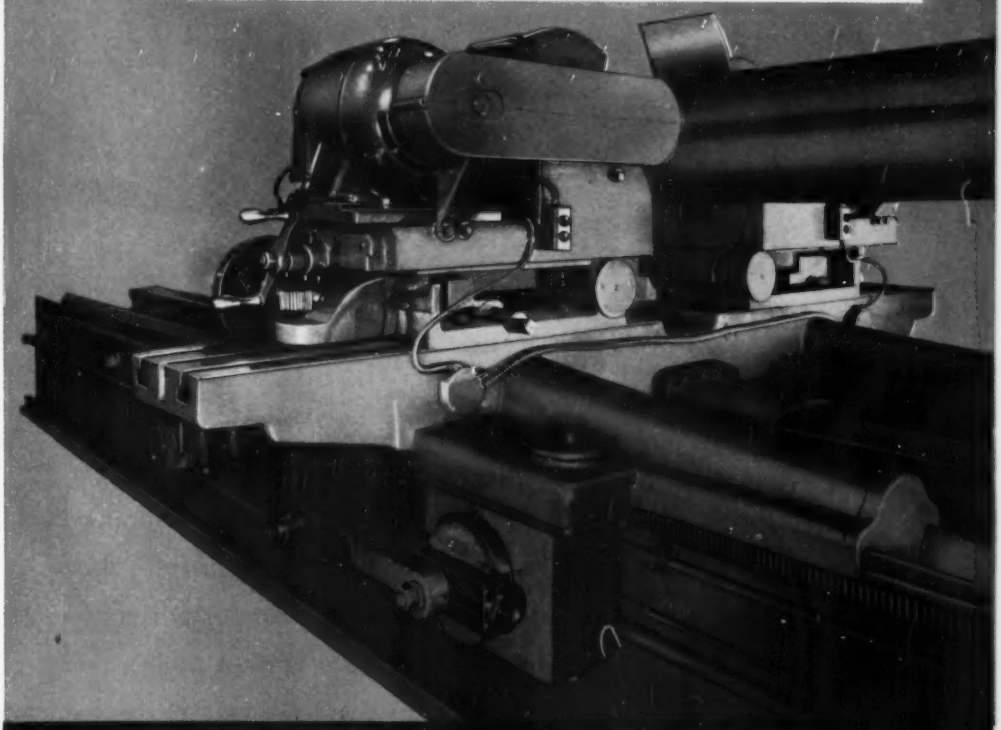
Whether your grinder is old or brand new, we'd like a chance to show how Taylor Automatic Control can save you money! Call your Taylor Field Engineer or write for Bulletin 98108. Taylor Instrument Companies, Rochester, N.Y., or Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.*

Taylor Instruments
MEAN
ACCURACY FIRST
IN HOME AND INDUSTRY

LOBDELL

improved PAPER MILL ROLL GRINDER

New Low Head Wheel Carriage reduces vibration . . . assures greater accuracy, higher finish on face of your rolls. Operator can maintain closer check on grinding operation. Rolls can be moved in and out faster and easier. Write for details.

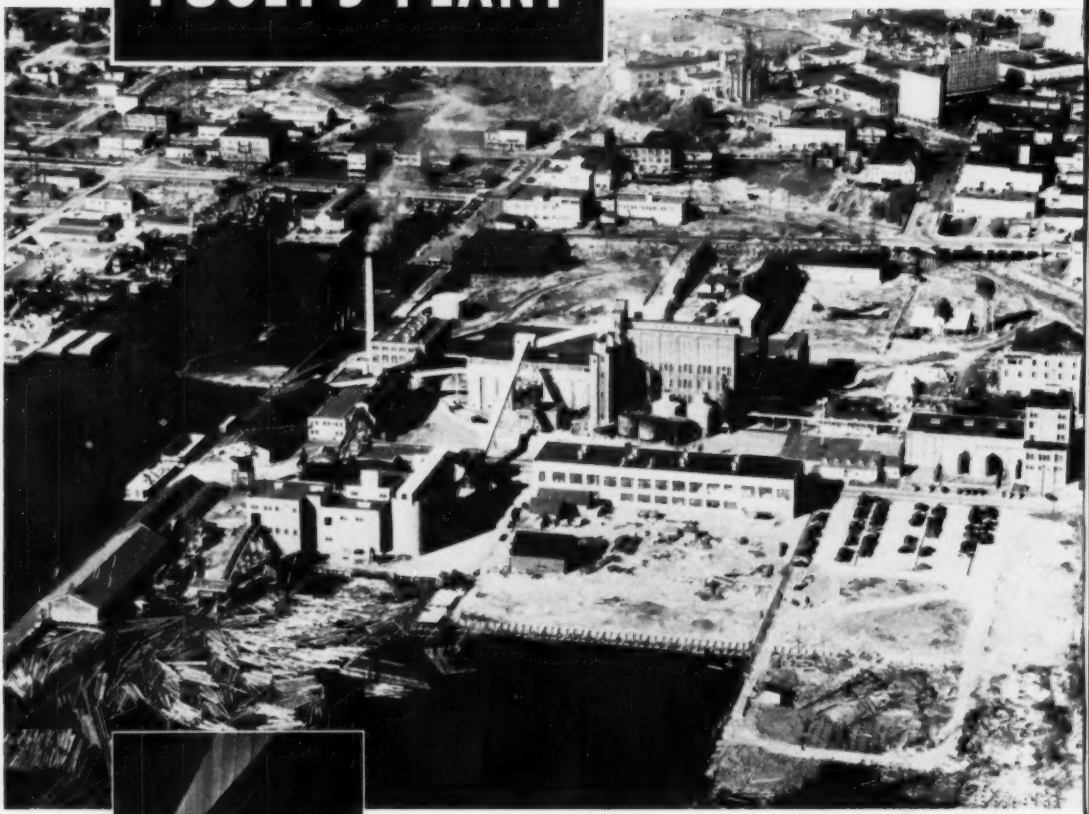


LOBDELL COMPANY *ESTABLISHED 1836* **WILMINGTON 99, DEL.**

EXPORT DEPARTMENT

767 DREXEL BUILDING, PHILADELPHIA 6, PA., U. S. A. CABLE ADDRESS: LOBDELLEX

THIS IS PUGET'S PLANT



AERIAL VIEW OF THE PUGET SOUND PULP & TIMBER COMPANY'S PLANT IN BELLINGHAM, WASHINGTON. MODERN BUILDINGS ARE GROUPED FOR STREAMLINED PRODUCTION AND READY ACCESS TO THE LOG POND AND ADJOINING DOCKS FOR WATER SHIPMENT

AMERICA'S LARGEST PRODUCER OF UNBLEACHED SULPHITE PULP

Puget Pulp's modern plant, plus scientific control from forest to shipping dock, insures a uniform product. ✱ Puget Pulp is one of the Nation's most important sources of unbleached sulphite market pulp.

CAPACITY: 125,000 TONS ANNUALLY

PUGET SOUND PULP & TIMBER COMPANY

BELLINGHAM • WASH.

Figure the Angleflow when you want BIG volume

When you need big volume at low to moderate heads, Fairbanks-Morse Angleflow Pumps fit right into your pump picture. Capacities ranging to 100,000 g.p.m. . . . sizes from 8 to 54 inches assure a size and capacity for every pumping job.

With wide, unobstructed passages through impeller and volute adaptable to either dry or wet pit service, these pumps are preferred for a wide variety of services. See your Fairbanks-Morse Pump Distributor or local branch office. Fairbanks, Morse & Co., Chicago 5, Ill.

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A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS
STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

WEST VIRGINIA Mill Brand Papers

Supercalendered	**Cup and Container**
English Finish	**Machine Coated**
Mimeograph	**Index Bristol**
File Folder	**Lithograph**
Envelope	**Post Card**
Writing	**Eggshell**
Poster	**Coated**
Cover	**Offset**
Label	**Music**
Tag	**Bond**

Kraft Converting and Kraft Envelope

Kraft Liner Board

•

West Virginia Pulp and Paper Company

230 Park Ave.
New York 17, N. Y.

Public Ledger Building
Philadelphia 6, Pa.

35 East Wacker Drive
Chicago 1, Ill.

503 Market St.
San Francisco 5, Calif.

Plants

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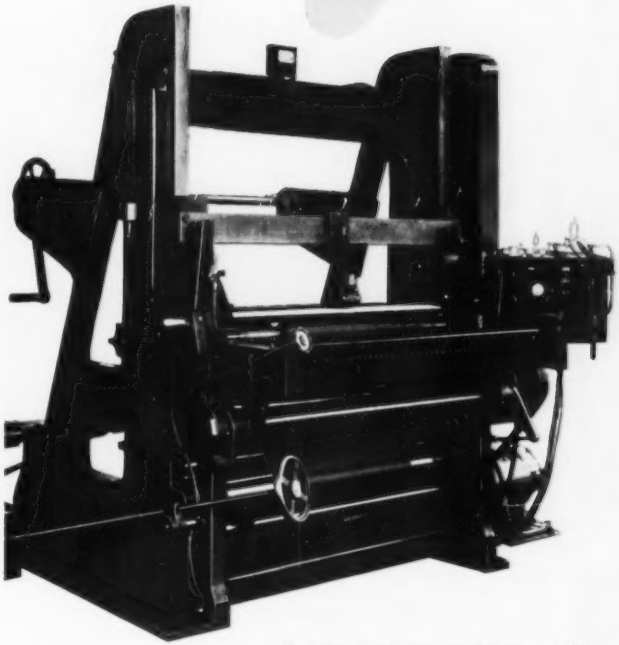
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

Here's A Slitter That Gives You:

Accurate Rolls, Easily Separated, Clean, Dustless Cuts...at 1200 FPM!

ONLY THE KIDDER MERCHANT MODEL SLITTER HAS ALL THESE ADVANTAGES:



- Modern design—completely anti-friction throughout.
- Shear cut style — surface wind — clean, dustless cuts so accurate the rolls practically fall apart.
- Speeds up to 1200 fpm.
- Automatic roll diameter setting device.
- Pneumatic counter balancing and top riding roll lifting device.
- Water cooled friction brake.
- No vibration — frame and parts are of heavy, rugged construction.
- Widths 42" and 52".

For low cost, low maintenance, high speed slitting, get the facts on the Kidder Merchant Model Slitter.

KIDDER
THREE POINT
SLITTERS

give you
1. Clean, Accurate Cutting
2. High Speed, Dustless Operation
3. Easy Separation of Rolls

KIDDER PRESS COMPANY, INC.

DOVER, NEW HAMPSHIRE

C. P. ROBINSON

Special Representative to Paper Mills on Slitters and Rewinders
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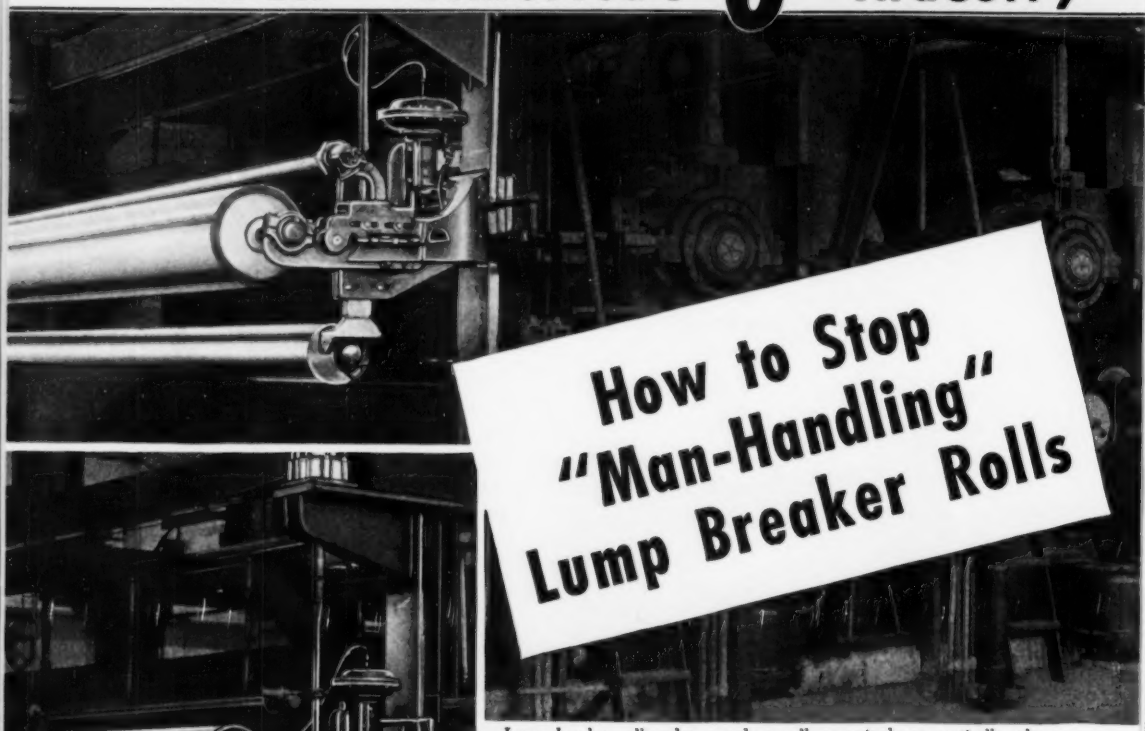
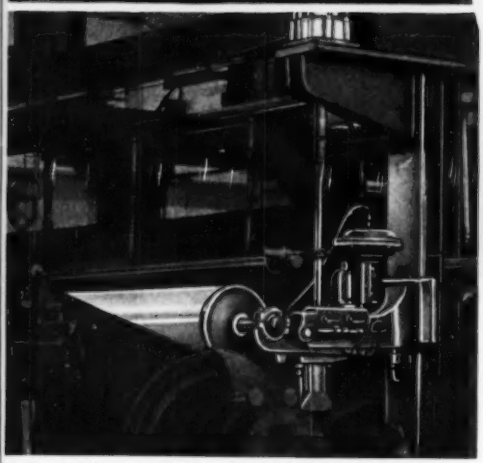
PAPER · · · America's 6th Industry

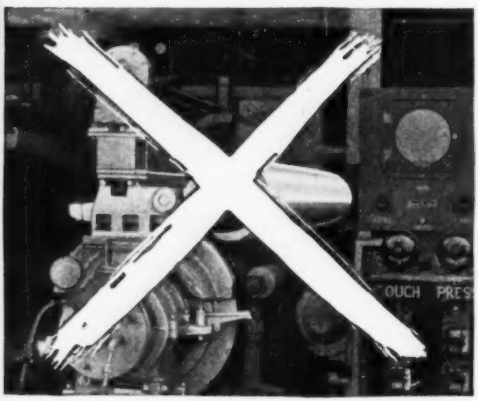


How to Stop "Man-Handling" Lump Breaker Rolls

Lump breaker roll and paper draw roll are raised pneumatically when installing fourdrinier wire with the new Puseyjones arrangement.



Improved arrangement with rolls in operating position.



Gone is the conventional mounting arrangement for lump breaker roll on suction couch. Chain hoist is no longer required. Simplifies wire change.

In the new Puseyjones Machines, the lump breaker roll and paper draw roll are lifted pneumatically for fast, efficient wire changing. Both rolls are permanently supported from the adjacent press frames and can be raised or lowered with a finger touch. Check these important advantages:

(1) Reduces down-time for wire change
(2) Eliminates use of crane
(3) Eliminates all man handling
(4) No chance of damage to the rubber roll

This is just one of the many design improvements and labor saving devices in the latest high-speed Puseyjones Machines. That's why you are years ahead with a new Puseyjones. Let us give you full details.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL

FEB. 24, 1949

VOL. 128, NO. 8

Cola G. Parker Again Heads APPA

NEW YORK—With only one exception, all of the 1948 officers of the American Paper & Pulp Ass'n., were re-elected on February 24, for 1949, as the 72nd Annual Convention of that organization came to a close at the Waldorf-Astoria Hotel, where it opened on February 19. The exception was the election of George Olmsted, Jr., president of the S. D. Warren Co., Boston, to a vice-presidency, replacing P. H. Glatfelter, president and treasurer of the P. H. Glatfelter Co., Spring Grove, Pa.

The officers are: Cola G. Parker, president, Kimberly-Clark Corp., Neenah, Wis., president; R. K. Ferguson, president and board chairman, St. Regis Paper Co., New York City, first vice-president. Vice-presidents: M. D. Bardeen, president, Lee Paper Co., Vicksburg, Mich.; D. K. Brown, president, Neenah Paper Co., Neenah, Wis.; Hugh J. Chisholm, president, Oxford Paper Co., New York City; F. G. Coburn, president, Brown Co., New York City; Sydney Ferguson, board chairman, Mead Corp., New York City; R. L. Fitts, president, Southern Advance Bag and Paper Co., Boston; J. H. Hinman, president, International Paper Co., New York City; D. S. Leslie, first vice-president, Hammermill Paper Co., Erie, Pa.; David L. Luke, Jr., president, West Virginia Pulp & Paper Co., New York City; R. A. McDonald, executive vice-president, Crown Zellerbach Corp., San Francisco; J. L. Madden, president, Hollingsworth & Whitney Co., Boston; and George Olmsted, Jr., Earl W. Tinker, 122 East 42nd street, New York 17, N.Y., executive secretary and treasurer.

OTHER ELECTIONS

Ass'n. Pulp Consumers

William Beckett, Beckett Paper Co., Hamilton, Ohio, president; Robert H. Evans, Riegel Paper Corp., vice-president; directors: R. G. Hagey, Ohio Boxboard Co.; G. E. Williamson, Strathmore Paper Co.; P. Koenig, of the P. H. Glatfelter Co.; and D. L. Stocker, Michigan Paper Co. of Plainwell.

Export Committee Meeting on World Trade

NEW YORK—Government and industry speakers on February 21 addressed mill representatives and members of the Export Committee of the American Paper & Pulp Ass'n. at Hotel Waldorf-Astoria on present problems in world trade and future prospects on United States exports of paper.

Howard Whitaker, Pulp and Paper Branch, ECA, addressed the group on pulp and paper shipments under the ECA program.

Harry G. Bengtsson, president, United States Paper Exporters Council, Inc., and president of the Benex Corp., reviewed the export merchant's problems in world trade.

Joseph Muller, chief, Forest Products Branch, Office of International Trade, Department of Commerce, addressed the group on "Foreign Trade Opportunities."

(Continued on page 126)

COLA G. PARKER

Bachmann Heads TAPPI

ALBERT E. BACHMANN

NEW YORK — Albert E. Bachmann was elected to the presidency, and Kenneth P. Geohegan to the vice-presidency of TAPPI at the first general convention session of that organization when it met on February 21 at Hotel Commodore. Mr. Bachmann, who had just completed two terms as vice-president, is vice-president and superintendent of Missisquoi Corp., Sheldon Springs, Vt. The new vice-president, who is also vice-president of the Aetna Paper Co., Div. of the Howard Paper Mills, Dayton, Ohio, was elected to the executive committee in 1947.

The ballot proposed five candidates for executive committeemen, four to serve full three-year terms, the fifth to complete the unfilled term of Mr. Geohegan. Elected to serve three years were: James d'A Clark, consulting engineer, Longview, Wash.; Martin L. Downs, chief chemist, Thilmany Pulp & Paper Co., Kaukauna, Wis.; Werner Kaufmann, president and general manager, Kupfer Bros. Co., New York; and George H. Pringle, division engineer, Mead Corp., Chillicothe, Ohio. Elected to serve one year was Karl O. Elderkin, manager of the Crossett Paper Mills, Crossett, Ark.

The Growth of Paper Consumption

By DR. L. T. STEVENSON

Economist—American Paper and Pulp Association, New York City

DR. LOUIS T. STEVENSON

The consumption of paper and board per capita is an index of the relative prosperity of the United States economy. It moves up and down with every movement of the business cycle. Per capita consumption as used here is production plus imports less exports with the results divided by population.

The Data

Table I shows annual per capita consumption and its supporting data from 1899 through 1948 and Chart I shows the annual per capita consumption of total paper and board starting with 1917. The long term upward trend is shown by the straight line. Chart II shows per capita consumption of paper and board, each plotted separately.

Behavior

The strikingly saw toothed movement of per capita consumption is immediately apparent from the charts. The long term upward drift or trend is apparent in all these series. All three series move up and down from the trend line at the same time and these movements coincide closely with the recognized movements of the business cycle. The only exception to this is noted in separate paper and board series shown in Chart II. During World War II board production was fostered by the W.P.B. pulp allocation office somewhat at the expense of paper production. Consequently paper per capita dropped steadily above its trend line. In 1945 with the close of the war and the abandonment of pulp allocation paper per capita jumped up sharply while board per capita moved up at a much slower pace.

Of the two per capita series, paper and board, the board series shows the slightly more rapid growth, i.e., the trend line tilts upward at a trifle sharper angle than the trend line for the paper series. The board per capita is also steadier in that its swings above and below the trend line are less than the swings of paper per capita. Board per capita suffers less from the movements of the business cycle than paper per capita.

A comparison of the packaging grades, coarse papers and boards, with the printing and publishing grades in-

Table I

UNITED STATES PAPER PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION

(QUANTITIES IN TONS OF 2,000 POUNDS)

TOTAL - ALL GRADES

YEAR	PRODUCTION	IMPORTS**	EXPORTS**	CONSUMPTION TONS	CONSUMPTION LBS./CAPITA
1899	2,167,593	--	--	2,167,593	57.9
1904	3,106,696	--	77,704	3,028,992	73.3
1909	4,121,495	55,962	74,764	4,102,693	90.5
1914	5,152,705	349,278	106,713	5,395,270	110.2
1917	5,803,808	524,267	274,246	6,053,829	118.5
1918	5,937,897	637,770	300,669	6,274,998	121.2
1919	5,966,076	707,548	420,540	6,253,084	119.1
1920	7,185,122	822,262	367,815	7,639,569	144.5
1921	5,333,397	860,730	166,986	6,027,141	111.4
1922	6,874,834	1,141,966	151,865	7,864,935	143.2
1923	7,870,756	1,467,478	145,646	9,193,588	164.8
1924 I	7,929,985	1,500,433	149,541	9,280,877	164.0
1925	9,001,742	1,567,121	152,351	10,416,512	181.4
1926 I	9,794,086	1,973,451	183,130	11,584,407	198.8
1927	10,002,070	2,107,344	184,226	11,925,188	201.8
1928	10,403,338	2,256,828	218,730	12,451,436	207.9
1929	11,140,235	2,533,603	262,383	13,411,455	220.3
1930	10,169,140	2,365,272	215,811	12,318,601	200.7
1931	9,381,840	2,136,079	170,891	11,347,028	183.0
1932	7,997,872	1,848,016	119,292	9,726,596	155.8
1933	9,190,017	1,852,420	126,854	10,915,583	173.8
1934	9,186,598	2,265,281	163,199	11,288,680	178.6
1935	10,479,095	2,456,998	178,370	12,757,723	200.5
1936	11,975,552	2,855,153	179,727	14,650,978	228.8
1937	12,837,003	3,412,409	221,419	16,027,993	248.8
1938	11,380,814	2,357,477	195,935	13,542,356	208.6
1939	13,509,642	2,687,484	248,569	15,948,557	243.7
1940	14,483,709	2,826,880	553,284	16,757,305	254.5
1941	17,762,365	3,123,490	464,389	20,421,466	306.6
1942	17,083,862	3,038,499	341,920	19,780,441	293.8
1943	17,035,688	2,720,906	319,922	19,436,672	284.8
1944	17,182,804	2,576,277	313,917	19,445,164	281.6
1945	17,370,965	2,753,211	458,689	19,665,487	281.7
1946	19,277,667	3,625,422	393,301	22,509,788	318.8
1947	**21,101,833**	**4,120,918**	**474,149**	**24,748,502**	**343.7**
1948(1)	22,062,445	4,530,000	334,000	25,257,445	358.5

(1)PRELIMINARY

**QUANTITIES ESTIMATED, WHOLLY OR IN PART, FROM VALUES GIVEN. IMPORTS AND EXPORTS FOR VARIOUS GRADES INCLUDE "PAPER PRODUCTS"

I ESTIMATED BY THE AMERICAN PAPER AND PULP ASSOCIATION

SOURCE: BUREAU OF THE CENSUS FOR PRODUCTION AND DEPARTMENT OF FOREIGN AND DOMESTIC COMMERCE FOR IMPORTS AND EXPORTS, AND THE AMERICAN PAPER AND PULP ASSOCIATION.

Anent to author: Graduate of Yale and then 21 years a paper manufacturer. Master's and Doctor's degrees at New York University Graduate School of Business Administration. Doctoral thesis, "Background and Economics of American Paper Making." Economist and paper manufacturers sales agent; War Production oBard specialist on Controlled Materials Plan. Since 1943 Economist, American Paper & Pulp Ass'n. Author of many articles on history and economics of paper industry, including "The Paper Industry and the Business Cycle," "An Index of the Basic Demand for Paper," also "Labor Productivity in the Paper Industry" and "A Capital and Income Survey of the United States Paper Industry."

dicates that the latter fluctuate the more widely of the two series. As packaging is the dominant series of the board per capita and printing and publishing grades dominate the paper per capital series it is to be expected that board per capita will suffer slightly less than paper per capita from the ups and downs of the business cycle.

Paper Coincides with the Business Cycle

The coincidence of the movements in paper and board per capita with the moves of the business cycle is confirmed by the Chart III and the following:

Messrs. Burns and Mitchell in their monumental work "Measuring Business Cycles"[1] shows the following tabulation of business cycle dates:

Peaks	Troughs
1918	1919
1920	1921
1923	1924
1926	1927
1929	1932
1937	1938

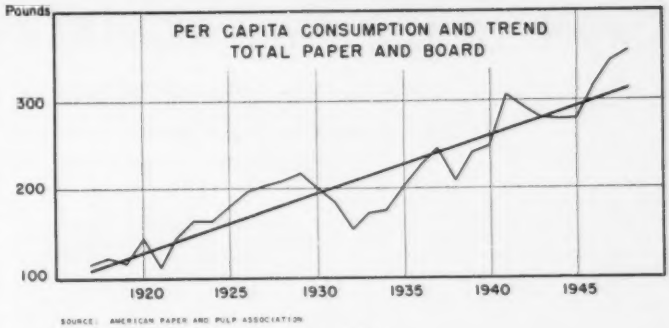
The cyclical movements of per capita consumption about the trend are here shown as a percentage of normal in Chart III. The Burns and Mitchell business cycle peaks and troughs are indicated by the Letters "P" and "T" respectively. The Burns and Mitchell peaks and troughs of the business cycles coincide with the peaks and troughs of paper and board shown in Chart III.

Conclusions

Now what is the significance of all this? Per capita consumption of paper and board, despite the ups and downs of the business cycle which modify it, is steadily growing in a long term upward sweep. This sweep has a trifle sharper upward tilt for the board group than for the paper group but both are distinctly upward. This upward sweep relates to *per capita* consumption only. When the increasing per capita consumption is multiplied by a steadily increasing population it spells out a long term upward growth for the paper industry, despite the intermediate ups and downs of the business cycle.

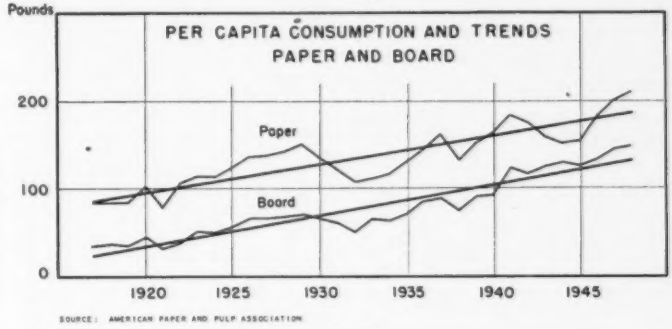
1. Burns, Arthur F. and Mitchell, Wesley C., *"Measuring Business Cycles,"* National Bureau of Economic Research, New York 1946 (p. 78, Table 16).

Chart I



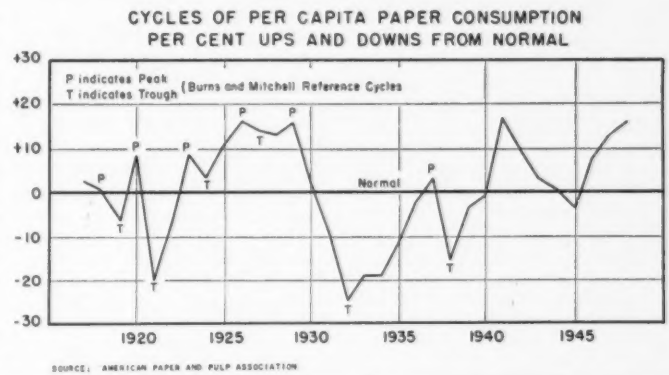
SOURCE: AMERICAN PAPER AND PULP ASSOCIATION

Chart II



SOURCE: AMERICAN PAPER AND PULP ASSOCIATION

Chart III



SOURCE: AMERICAN PAPER AND PULP ASSOCIATION

Coated Seeds Speed Growth

MIDLAND, Mich. — Pelleted seeds, which fertilize themselves, ward off rats, insects and birds; resist extreme temperatures, hold their moisture until time to sprout, and fight plant diseases, are getting into full production at a small factory here.

Dr. Phelps Vogelsang of Processed Seeds, Inc., the man responsible for development of the process, a method of coating seeds with chemicals until they look like small pebbles, says: "Our research work has been extensive over a five-year period. We have worked with colleges, experimental stations and large canners."

In the coating process, seeds tumble in machines much like cement mixers while chemical mixtures spray over them. The coating is allowed to harden and the seeds are ready for use.

One of the prime advantages of pelleted seeds is easy handling. They can be spaced so that later thinning of plants is unnecessary. They are especially suited for airplane planting.

Ability of the pellets to resist weather extremes makes it possible to plan ahead of time, and by direct field seeding transplanting is eliminated.

The pelleting process is used on seeds ranging from evergreen trees to flowers.

Chemical coatings contain fungicides to kill such diseases as smut, insecticides to discourage insects and worms, fertilizer to produce a healthy and rapidly growing seedling, hormones and vitamins to hasten sprouting and stimulate the seedling, minor elements such as boron and manganese which are often deficient in soils and an arrangement to give the best alkalinity or acidity for rapid growth.

The coating itself serves as a moisture control. Most seeds require more than 18 per cent moisture before they sprout. The pellet layer holds in natural moisture of the seed in dry ground, but it softens when more than 18 per cent moisture is present in soil, thus allowing the sprout to emerge.

Paper in the National Industrial Economy

By COLA G. PARKER

President—American Paper & Pulp Association, New York City

As an industry, our growth, which has been phenomenal for the past decade, continued through the year 1948. Paper and board capacity in the United States which in 1940 was 16,900,000 tons, in 1947 had grown to 21,700,000 tons and, in 1948, to 23¼ million tons. Projected into 1949, paper and board capacity is estimated at 24,325,000 tons. Pulp capacity has likewise kept pace; it jumped from 10,400,000 tons in 1940 to 12,800,000 in 1947 and to over 14,000,000 tons in 1948; with the estimated 1949 capacity just short of the 15,000,000 ton mark. These data indicate a truly phenomenal growth, particularly for an industry as ancient as ours.

A few basic figures give some conception of the importance of our industry in the national industrial economy. For 1948 our transportation bill alone approached $500,000,000, payrolls exceeded $1,400,000,000 and taxes to the Federal Government alone will approximate $400,000,000. The industry's sales for 1948 were about 5¼ billion dollars.

In considering the welfare of the paper industry for the year 1948 and for the future, we must recognize that it now occupies such a vital position among the industries of the United States and in our national economy that its welfare and stability should be of concern not only to every citizen but also and particularly, to our Federal and state governments.

It is of outstanding importance that we increasingly remember, what to date is so seldom recognized outside of our industry—that our mill locations are largely in smaller communities (many of which we built and built well) where the livelihood of the whole community is almost wholly ours to provide. In that respect at least, we are almost unique among manufacturing industries.

When we look at the record for 1948, the paper industry has a performance of which to be proud.

Capacity figures, which I have mentioned, of course are interesting. But production is even more important for only from production comes payrolls, the wherewithal to purchase materials from others and profit—the return for risk-taking. So, we find 1948 production exceeded 22 million tons contrasted with 14½ million tons in 1940—more than a 50 per cent increase. Per capita consumption has increased from 254 pounds in 1940 to 358 pounds in 1948. This is quite an item to consider in relation to the tremendous growth in population, between 1940 and 1948, approximating 15 million people, a growth which has not yet stopped.

While we have much in this record for which to be grateful, we should be properly humble about it. We cannot rightly claim all the credit; for we must recognize that without the record production and the contribution to our national requirements of Canadian fibre and newsprint, the United States industry and the public requirements for 1948 could not have been met. We should, therefore, insist on giving grateful recognition to the Canadian industry.

At a time when the public is confused by conflicting claims as to industry's effort to meet demand, with many voices (for ulterior motives) claiming that all industry has refused to expand in order to create and perpetuate monopoly conditions, we offer ourselves as an outstanding example of an industry responding with all the speed that pressure made possible to achieve a capacity more than adequate to public needs. I know that such a record could only have been possible under our free enterprise system. It is too bad we haven't available authentic records, made under other systems, from which to draw a comparison. Obviously, any statement based on the contrast between our records and those of the socialistic or semi-socialistic systems of England, France and the other nations of western Europe—where figures are in part available—is subject to the counter-argument that, in their economies, influences other than the socialistic approach have determined what might be done in the matter of expanding either capacity or production. But, whether we believe that or not, there can be no doubt that *our* records *should* command the respect and acknowledgment of all consumers of paper and board.

So much for the record of the past. We are, as is usual in any dynamic economy, more concerned with the future than with the past—however great our pride in that past.

So it seems desirable to mention certain basic considerations as they relate to the year ahead of us. I do so with full recognition that the role of a prophet is thankless, without honor and without *profit* (no pun is intended).

First, let me mention that if there had been any doubt about it, a cursory examination of history should have made clear to anyone interested that our industry would bring into being adequate supply to meet any demand at the earliest possible moment. We have never failed to meet demand with supply in the past—so why anyone should have doubted our doing so in the last year or two, is beyond me. However, reaching this balance didn't occur over night. A balance has been approaching for months. So its arrival throughout the whole industry shouldn't be an occasion for panic or undue pessimism.

On the contrary, paper *consumption* (and I am referring to use by the ultimate consumer and not just *orders* by intermediate handlers of paper and board), consumption is continuing at record levels. It took two years of Herculean effort on the part of the industry to bring exhausted inventories up to a normal level. When that level was reached it was certainly possible to conclude that when pipe lines once more were full to overflowing the wise procedure might be to let the fullness subside a little. This seems to me perfectly natural particularly when we consider that it has been a very long time since there were inventories even remotely approximating what were formerly considered normal in relation to sales. But, be that as it may, so long as per capita consumption remains at 350 pounds or better, I can see no occasion to anticipate any great cataclysm. As I mentioned earlier, population continues to grow.

Recently there has been considerable (mayhap an understatement) discussion and many pronouncements regarding the meaning of the late election. The analysis in which I am interested at the moment relates to its economic or philosophic meaning as distinguished from any partisan political meaning. One view that has seemed to me quite interesting has back of it the feeling that there was no real issue presented in the election between the two major parties; that the only basic issue presented was that between the states' rights party and the other three candidates; and that this may be disregarded because it was complicated by sectionalism and was presented to only a small portion of the electorate.

The view I have referred to may be summed up in the statement that the American people as a whole have evidenced intention to make far greater demands upon industry than most people, including business executives, have expected.

These demands are for production sufficient: (1) To pay high and increasing real wages to all employes; (2) To make possible greater defense; (3) To provide totally unprecedented aid to the

(Continued on page 144)

An address delivered at the annual dinner of the American Paper & Pulp Ass'n., at Hotel Waldorf-Astoria, New York City, February 23, 1949. Mr. Parker is president of the Kimberly-Clark Corp., Neenah, Wis.

Another New High Achieved by the Paper Industry

Production of 22,048,000 Tons in 1948 Outstrips Demand—Normal Buyer's Market Returns

By MORRIS C. DOBROW

Executive Secretary—Writing Paper Manufacturers Association, New York

It was said a year ago that, "In 1948, the paper and paperboard industry may even establish a new high record by satisfying a demand for about 22,000,000 tons. But the industry, with its increased capacity, will be striving to produce and sell more than 23,000,000 tons."

As it turned out, total production of paper and paperboard for the year reached 22,048,766 tons—an all-time record, 4 percent higher than 1947, itself a record year, 63 percent higher than the 13,509,642 tons produced in 1939, and 83 percent higher than the average for 1935-1939.

There is, however, little likelihood that a new production record will appear in 1949, and perhaps not in 1950, because, for the present, production has clearly outstripped demand. Moreover, capacity has outstripped the country's requirements for the immediate and nearby future.

Last summer it became evident that increased production in some branches of the industry had overtaken demand, that pipe lines, long depleted, were being replenished. Feverish placing of orders declined although mills were still able to continue capacity operation by shipping against the huge backlog of orders. In the 4th quarter of 1948, some of the divisions in the industry had completely depleted their backlog and current orders were not sufficient to sustain production at full capacity levels. Buyers who had complained bitterly of undersupply began to talk of their unbalanced inventories. Competition began to return in many lines and the market changed from a seller's to a buyer's market. This is but another way of saying we are returning to a normal way of doing business after nine years of wartime boom.

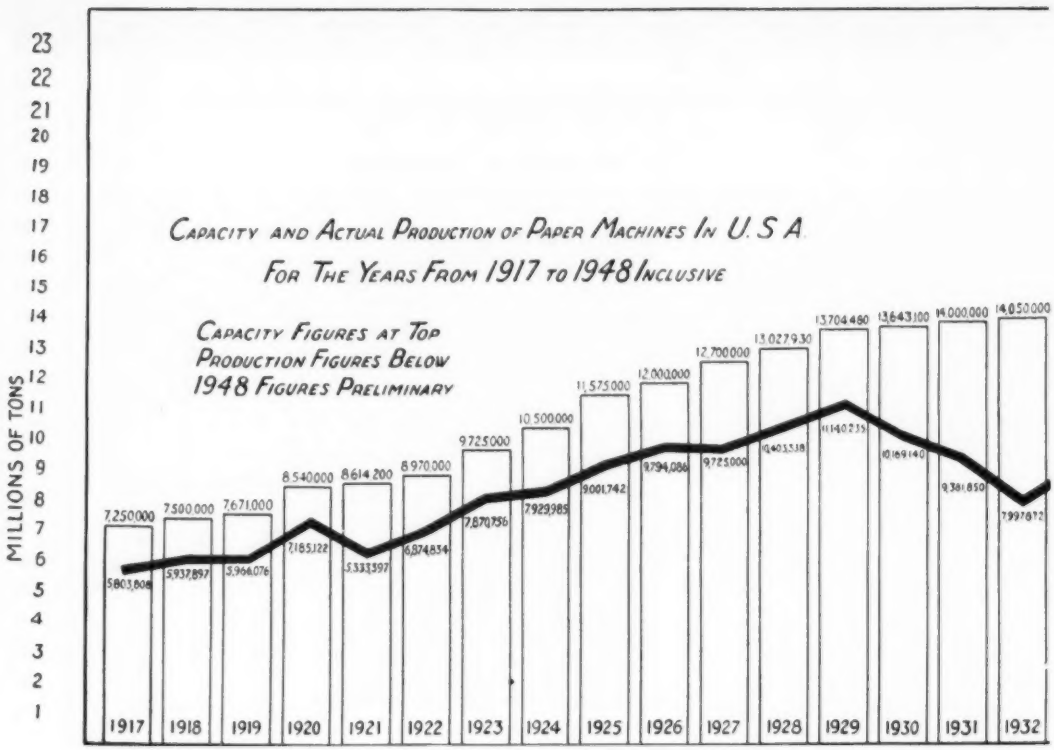
MORRIS C. DOBROW

The paper industry again has turned to the general business picture of the country for a clue to actual consumption and prospective volume of demand for its products.

At the turn of the year, general business volume was still high, but it was evident that at least a part of 1949 would be a period of correction or readjustment in the amount of goods produced, as well as in the general price

UNITED STATES CAPACITY AND PRODUCTION BY GRADES February 14, 1949

GRADE	1939			1946			1947			PRELIMINARY 1948		
	CAPACITY	ACTUAL PRODUCTION	%	CAPACITY	ACTUAL PRODUCTION	%	CAPACITY	ACTUAL PRODUCTION	%	CAPACITY	ACTUAL PRODUCTION	%
WRITING PAPER	747,100	594,594	80	910,000	904,849	99	964,000	918,349	95	972,000	924,403	95
OTHER FINE PAPERS	165,570	128,508	78	260,000	232,562	89	267,000	253,190	95	270,000	232,800	86
BOOK PAPER	1,921,260	1,534,591	80	2,020,000	1,933,428	96	2,197,000	2,207,923	100	2,420,000	2,284,245	94
GROUNDWOOD PRINTING AND SPECIALTY PAPERS	631,470	540,342	86	810,000	775,779	96	838,000	821,318	98	850,000	836,570	98
NEWSPRINT PAPER	988,280	954,259	97	850,000	772,797	91	832,000	833,038	100	912,000	866,235	95
TISSUE PAPER	772,480	648,429	84	1,150,000	1,044,495	91	1,236,000	1,088,656	88	1,322,000	1,193,691	90
WRAPPING PAPER AND SPECIAL INDUSTRIAL	2,609,580	2,238,993	86	3,250,000	2,985,133	92	3,477,000	3,192,949	92	3,784,000	3,461,121	91
BUILDING PAPER AND INSULATION	938,370	659,090	70	1,160,000	1,035,639	89	1,160,000	1,276,942	110	1,260,000	1,285,971	102
ALL OTHER PAPERS	252,340	185,342	73	110,000	102,811	93	111,000	100,486	91	111,000	108,614	98
TOTAL PAPER	**9,026,450**	**7,484,148**	**83**	**10,520,000**	**9,787,493**	**93**	**11,082,000**	**10,692,851**	**96**	**11,901,000**	**11,193,156**	**94**
PAPERBOARD AND BUILDING BOARD	7,530,960	6,025,494	80	9,900,000	9,490,174	96	10,589,000	10,408,982	98	11,339,000	10,855,610	96
TOTAL PAPER AND PAPERBOARD	**16,557,410**	**13,509,642**	**82**	**20,420,000**	**19,277,667**	**94**	**21,671,000**	**21,101,833**	**97**	**23,240,000**	**22,048,766**	**95**



level. Nevertheless, the large government expenditures for defense and European recovery are expected to continue business activity at a high rate, but with increasingly strong competition and many difficulties of marginal producers.

The favorable effects of the 1948 tax reduction are still coming along but the threat of higher tax payments in 1950 has chilled business enthusiasm, and lessened incentives. Our economy is precariously balanced between deflationary and inflationary trends and the government's fiscal policies will be all important in determining future trends. Because the political situation is not clearly defined, there is a growing tendency to be conservative with respect to future commitments and risks.

TABLE I

U. S. Capacity and Production Paper and Paperboard

Year	Capacity Tons	Production Tons	% of Capacity
1899	2,782,200	2,167,593	78
1904	3,858,000	3,106,696	81
1909	5,293,400	4,121,495	78
1914	6,439,800	5,152,705	80
1918	7,500,000	5,937,897	79
1919	7,671,000	5,966,076	78
1920	8,540,000	7,185,122	84
1921	8,614,200	5,333,397	62
1922	8,970,000	6,874,834	77
1929	13,704,480	11,140,235	81
1930	13,643,100	10,169,140	75
1931	13,971,700	9,381,840	67
1932	13,728,040	7,997,872	58
1937	15,572,850	12,837,003	82
1938	16,191,300	11,380,814	70
1939	16,557,410	13,509,642	82
1943	18,830,000	17,035,688	90
1944	19,260,000	17,182,804	89
1945	20,282,000	17,370,965	86
1946	20,420,000	19,277,667	94
1947	21,671,000	21,101,833	97
1948	23,240,000	22,048,766	95

Increases in Productive Capacity

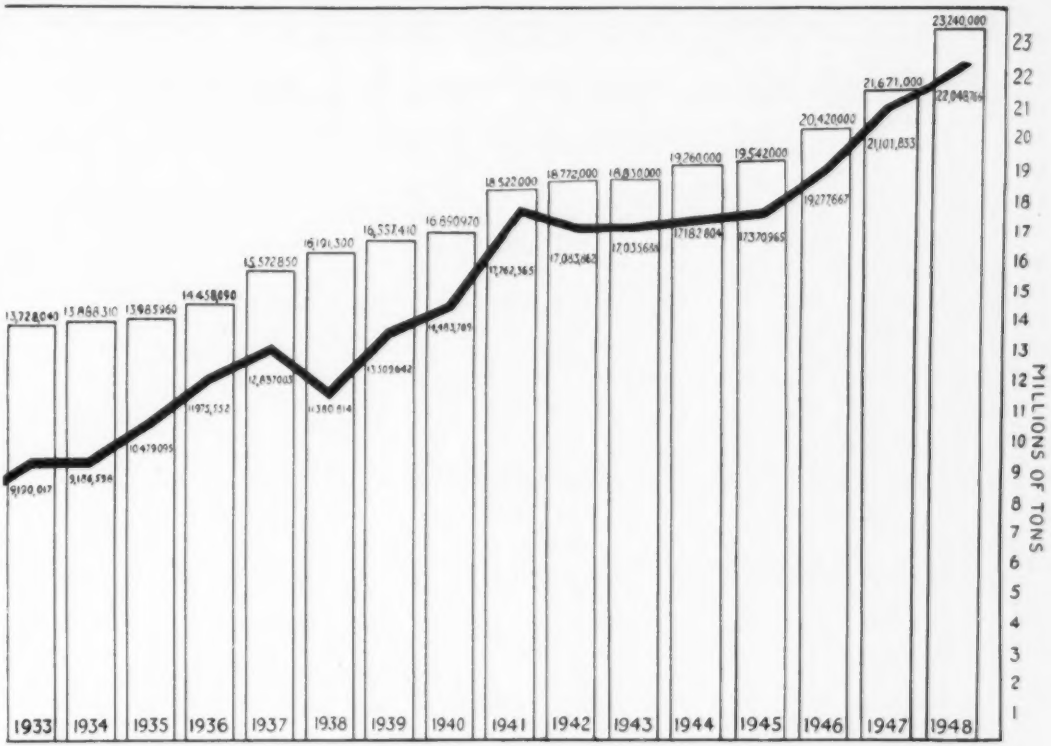
The capacity of the U.S. paper industry was about 23,240,000 tons at the end of 1948 and is expected to approximate 24,325,000 tons at the end of 1949. In 1939, it was 16,557,000 tons. The additions for 1949 are largely in the packaging and wrapping fields—642,000 tons additional paperboard capacity and 325,000 tons of additional capacity for making wrapping papers.

These productive capacities, plus nor-

TABLE II

Capacities—Annual Basis

Grade	1939 Tons	1945 Tons	Expected 1949	% Change 1949 1939	% Change 1949 1945
Writing Paper	747,100	909,000	974,000	+ 30%	+ 7%
Other Fine Papers	165,570	260,000	303,000	+ 83%	+ 17%
Book Paper	1,921,260	1,948,000	2,490,000	+ 30%	+ 28%
Groundwood	631,470	773,000	871,000	+ 38%	+ 13%
Newsprint	988,280	876,000	912,000	— 8%	+ 4%
Tissue	772,480	1,115,000	1,334,000	+ 73%	+ 20%
Wrapping	2,609,580	3,233,000	4,076,000	+ 56%	+ 26%
Building	938,370	1,160,000	1,272,000	+ 36%	+ 10%
All Other	252,340	108,000	112,000	— 56%	+ 4%
Total Paper	9,026,450	10,382,000	12,344,000	+ 37%	+ 19%
Paperboard & Building Board	7,530,960	9,900,000	11,981,000	+ 59%	+ 21%
Total Paper & Board	16,557,410	20,282,000	24,325,000	+ 47%	+ 20%



mal imports, chiefly newsprint, are in excess of domestic paper requirements. This was confirmed by the behavior of the market in the latter months of 1948. Shortages disappeared, pipe lines were filled up and the market was unable to absorb all of the new production. This was all relative to the increased productive facilities because actually, consumption of all types of paper was greater than ever before.

The question, then, is how far have productive facilities run ahead of consumption needs? The building of new paper machines and the enlargements of production on many old machines have, in the aggregate, probably gone beyond current requirements of the country. The paper industry has done this in every previous boom, but, in painful time, the growth of consumption justified the additional capacity. In this instance, the waiting time for demand to catch up with present capacity also may be painful, but it probably will not be of long duration.

TABLE III
1948 Production

	as Related to 1939	as Related to 1945
Fine	+ 60%	+ 16%
Book Paper	+ 49%	+ 52%
Groundwood	+ 55%	+ 32%
Newsprint	— 9%	+ 19%
Tissue	+ 84%	+ 22%
Wrapping and special industrial	+ 55%	+ 31%
Building and insulation	+ 95%	+ 46%
All Others	— 41%	+ 23%
Total Paper	+ 50%	+ 32%
Paperboard & Building Board	+ 80%	+ 22%
Total Paper & Board	+ 63%	+ 27%

The uses of paper have exceeded past expectations because the boom, or perhaps the growth of business, has been greater than expected. Boom conditions stimulate the per capita use of paper. Furthermore, there has been a larger than expected increase in population. The latest Census figures indicate a population at the end of 1948 of 148,000,000, compared with 130,300,000 at the end of 1938. This increase in the last decade is about 100 percent greater than from 1930 to 1940. Significantly, the growth in the past ten years is more than the rate of growth in the first 3 decades of this century, when immigation and other factors created a high rate of increase in our population. With an expected population exceeding 150,000,000 at the beginning of the 50's, there is every reason to believe that the paper requirements of the country will be such as to occupy nearly all of the existing paper machine capacity soon after the next decade begins.

The ten-fold growth of the paper industry since the beginning of the century and the ability of the people of this country to consume this paper is probably one of the wonders of this age. The growth of the productive facilities as well as production of the last fifty years is indicated in the records of the significant periods, as shown in Table I.

It is interesting to note the distribution of this growth between grades during recent years, as illustrated by Table II, a summary of capacity by grades at the end of 1939, at the end of 1945, the year in which the war ended, and as expected by the end of 1949. The percentage changes indicated are related to the pre-war and post-war periods.

Actual Production in 1948

In 1948, the industry produced 22,048,766 tons of paper and paperboard. For the industry as a whole, this was a gain of 4 percent over the 1947 previous production record of 21,101,833 tons. The data for the various segments of the industry should be examined carefully, because all branches did not experience the same relative gain. Government regulations to meet

TOTAL WOOD PULP - ALL GRADES

1945

SUPPLY		U.S. CONSUMPTION AND EXPORTS	
IMPORTS - CANADIAN	1,079,000	EXPORTS	136,000
IMPORTS - EUROPEAN	675,000	IN MANUFACTURE OF NON-PAPER PRODUCTS	540,000
U.S. PRODUCTION	10,167,000	IN MANUFACTURE OF PAPER AND PAPERBOARD	10,825,000
			11,501,000
		INVENTORY REPLACEMENT	420,000
	11,921,000		11,921,000

1946

SUPPLY		U.S. CONSUMPTION AND EXPORTS	
IMPORTS - CANADIAN	1,245,000	EXPORTS	39,000
IMPORTS - EUROPEAN	560,000	IN MANUFACTURE OF NON-PAPER PRODUCTS	473,000
U.S. PRODUCTION	10,607,000	IN MANUFACTURE OF PAPER AND PAPERBOARD	12,092,000
	12,412,000		
*WITHDRAWAL FROM INVENTORY	192,000		
	12,604,000		12,604,000

1947

SUPPLY		U.S. CONSUMPTION AND EXPORTS	
IMPORTS - CANADIAN	1,538,000	EXPORTS	130,000
IMPORTS - EUROPEAN	792,000	IN MANUFACTURE OF NON-PAPER PRODUCTS	570,000
U.S. PRODUCTION	11,946,000	IN MANUFACTURE OF PAPER AND PAPERBOARD	13,285,000
			13,985,000
		INVENTORY REPLACEMENT	291,000
	14,276,000		14,276,000

1948 (PRELIMINARY)

SUPPLY		U.S. CONSUMPTION AND EXPORTS	
IMPORTS - CANADIAN	1,602,000	EXPORTS	94,000
IMPORTS - EUROPEAN	575,000	IN MANUFACTURE OF NON-PAPER PRODUCTS	623,000
U.S. PRODUCTION	12,872,000	IN MANUFACTURE OF PAPER AND PAPERBOARD	14,332,000
	15,049,000		15,049,000

February 15, 1949

wartime needs changed the pattern of production of the industry. Since the end of controls there has been a trend in many grades to return to something like their prewar pattern.

The changes in 1948 production, compared with 1939 and 1945, Table III, indicate to some extent the character of these postwar shifts.

Total fine paper production at 1,156,700 tons in 1948 was 1 percent lower than a year ago. 1948 production was 60 percent higher than in 1939.

The production of sulphite writing grades increased 6 percent in 1948 over 1947, whereas rag content papers declined 22 percent, largely because of the elimination of many wartime substitute uses. Demand for some of the grades used during the war have vanished. In addition, many of the substitute uses were eliminated when buyers could obtain less expensive papers.

In the general business picture, there are many indications that consumption of fine papers will continue high for the present, but not sufficiently high to take up the additional capacity. In addition, inventories are being used for some of the consumption. During the next few months the industry may expect a continuation of the shift or readjustment of inventories which apparently has been occurring for some time past. Printers and large consumers no longer find it necessary to carry large stocks, as was necessary in the periods of shortages and scarcities. They now are able to get deliveries promptly. They are letting their stocks go and not replacing them because, now that supply has overtaken demand in the whole printing paper field, they can get prompt service. That, of course, was the normal condition before the war, when printers carried little or no stock and used merchants' and mills' inventories for their immediate requirements.

After severe wartime regulations on the use of paper for periodicals and newspapers were lifted, book paper production continued to increase to 2,284,000 tons in 1948, a gain of 52 percent over the 1945 production and 49 percent over 1939.

Newsprint supply in the U.S. during 1948 was about 5,200,000 tons (4,345,000 tons imported from Canada), a 54 percent gain over the 1945 supply of 3,375,000 tons.

Advertising in local newspapers continued to gain and newspapers were hard pressed to secure sufficient newsprint tonnage to meet their needs. It was probably the only branch of the paper industry in 1948 where premium prices continued for spot supplies, but the premiums over contract prices were much smaller than in the previous year.

Pulp Supplies Come Into Balance

Pulpwood supplies improved even more in 1948 than they did in 1947.

Total pulpwood receipts in 1948 were 5 percent higher than in 1947. Receipts of domestic wood increased 5 percent, while imports increased 10 percent. Consumption of pulpwood was 6 percent above that of 1947. Inventories at the end of 1948 were 23 percent above inventories at the end of 1947 and 59 percent above those at the end of 1946. Further increases in inventories of pulpwood, despite the record consumption in 1948, have resulted in the termination of operations on some high-cost wood lands.

At the beginning of 1948, the pulp market had every appearance of shortage and scarcity. By mid-year, increased production on the North American continent had brought about a better balance between supply and demand. In the latter part of 1948, supply increased further, due largely to greater North American production and lessened consumption by converting mills.

Early in 1948, bleached pulps, imported from Europe, were selling at premiums of $50 to $60 a ton above the contract levels of West Coast and Canadian market pulp mills. The premiums for European pulp, as well as spot lots, diminished during the year as the over-all supply came into better balance with demand. Around the turn of the year, spot sales of bleached sulphite were made at about $140 per ton, whereas contract prices from West Coast and Canadian mills remained at $126 to $135 delivered to paper mills, practically unchanged since the beginning of 1948.

The low rate of imports from Europe in recent months indicates that the important reductions already made in the prices of European pulp had little effect in increasing their sales, because, presumably, buyers felt that these prices, as well as other premium prices, must eventually seek the competitive

(Continued on page 98)

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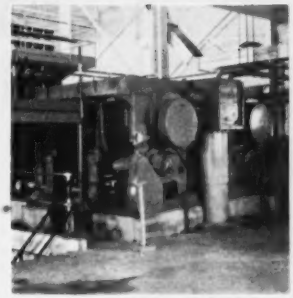

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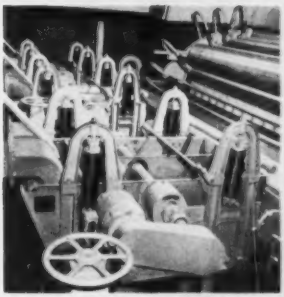

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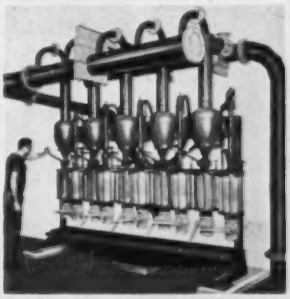

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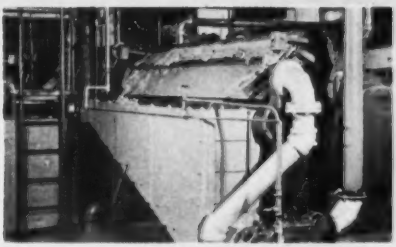

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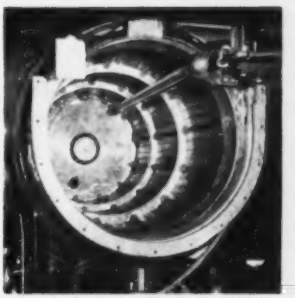

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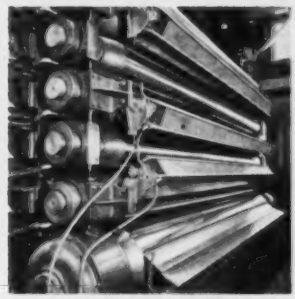

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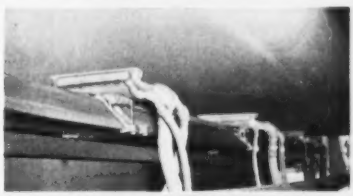

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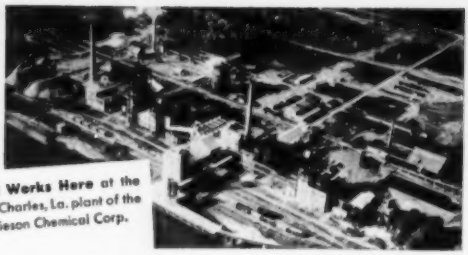

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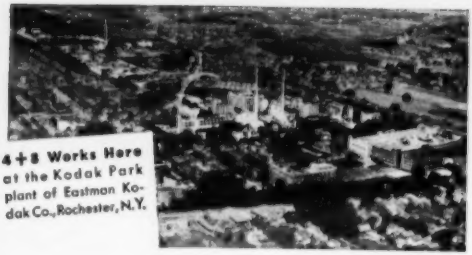

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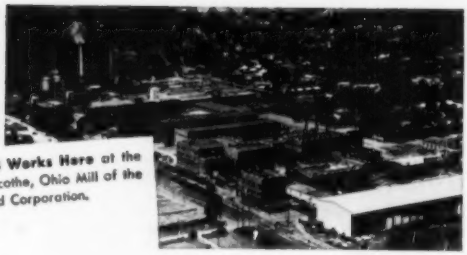

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Interim Report on the Pulping Qualities of Crushed and Uncrushed Bamboo Chips

By M. P. BHARGAVA, M.Sc., A-1-C and CHATTAR SINGH, B.A.
Forest Research Institute, Dehra Dun

Summary

An account of the investigations carried out at the Forest Research Institute, Dehra Dun, on the pulping qualities of crushed and uncrushed bamboo chips. Three kinds of chips, viz. (a) crushed, (b) partially crushed and (c) uncrushed, were obtained from Indian paper mills and were digested in the laboratory with a view to compare the uniformity, bleachability and yield of pulps from each kind.

The investigations show that thoroughly crushed chips yield the highest percentage of both unbleached and bleached pulps. These pulps are, comparatively, more uniform in quality, and require the least percentage of standard bleaching powder for the production of a good white shade.

An explanation of the results of digestion and bleaching, based on a study of the structural characteristics of bamboo, is also given in the bulletin.

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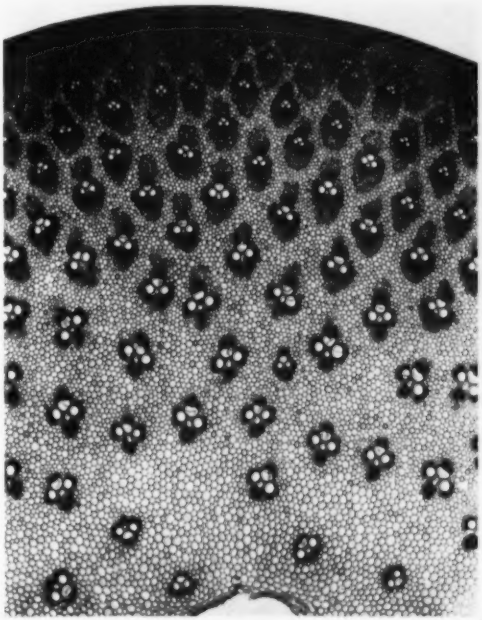

Figure 1—Transverse section of a portion of internode of Arundinaria falcata (X 25).

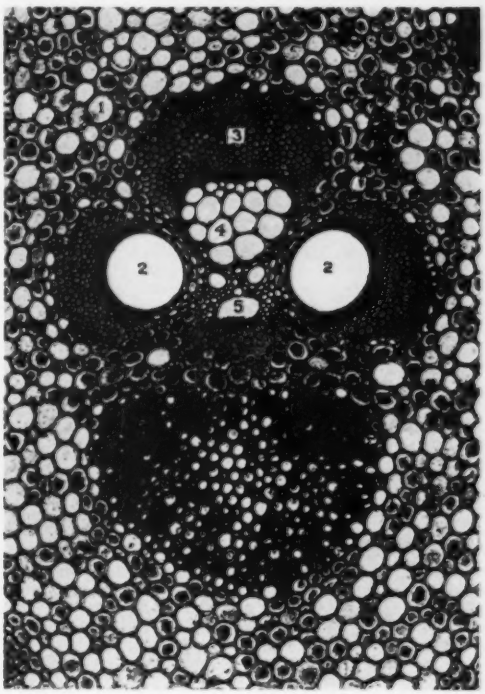

Figure 2—Transverse section of a single vascular bundle of Dendrocalamus strictus showing (1) Parenchymatous tissue (2) Vessels (3) Fibres (4) Sieve tubes (5) Annular vessel. (X 110)

For the manufacture of a uniform quality of well-digested chemical pulp from bamboos, it is essential to disintegrate the stems into small chips, in order that the

chemicals employed for digestion may thoroughly penetrate, and have as complete and uniform an action as possible on every part of the chip. The chips themselves should be as nearly uniform as possible and in a state of mechanical disintegration which would permit the maximum ease of penetration (under the conditions employed for the digestion of the chips) to the solution of the chemicals used.

Methods of Mechanical Disintegration Used by Indian Paper Mills

The following methods are in use in Indian paper mills for the mechanical disintegration of bamboos into chips:—

1. Crushing bamboo stems between heavy iron rollers of special design. (Designated B.P.M.)

In this method, the internodes are thoroughly crushed and separated into groups of fibre bundles, and, at the same time, due to heavy pressure, are broken into pieces of irregular lengths. The waxy and siliceous epidermis of the internodes is practically shorn apart and broken up, and the bundle sheaths are also considerably loosened. The nodes are partially pulverized to small particles or powder, which are removed from the disintegrated mass during the subsequent process of screening.

2. Crushing bamboo stems between iron rollers of special design and then transversely cutting the crushed pieces. (Designated T.P.M.)

In this method the crushing effect on both the nodes and the internodes is not nearly so heavy as in the previous method. The internodes are, of course, crushed and are separated into comparatively larger groups of fibre bundles. The waxy and siliceous epidermis and bundle sheaths are also also more or less broken up. A good proportion of the nodes is pulverized although some comparatively larger pieces of crushed nodes are found in the disintegrated mass.

3. Chipping of bamboo stems by means of knives. (Designated I.P.M.)

In this method, the bamboo stems are cut obliquely by rotating knives into more or less uniform chips about 1″ to 1¼″ long and ⅛″ to ⅜″ in thickness. The fibre bundles of chips composed of internodal material are neither separated nor loosened, and the bundle sheaths remain more or less intact. Small pieces of uncrushed nodes are also found in the disintegrated mass. The chips are similar to the wood chips used in the manufacture of chemical pulps from wood.

Laboratory Experiments

Samples of chips, prepared from *Dendrocalamus strictus (salia* bamboo) the Bengal Paper Mills, Ltd., the Titaghur Paper Mills Ltd., and the India Paper Pulp Co. Ltd., and tests were carried out in the laboratory with a view to compare the uniformity, bleachability, and yield of pulps of each sample under identical conditions of digestion. The three kinds of chips from the Bengal Paper Mills, the Titaghur Paper Mills and the India Paper Pulp Co. Ltd., are designated in the text and appendices of this bulletin as 'B. P. M.', 'T. P. M.', and 'I. P. M.', respectively.

The samples received from the Bengal Paper Mills consisted of pieces many of which were too long for the laboratory autoclave. These pieces were cut into shorter lengths about 1″ to 2″ long.

All the three samples of chips were then screened through a 16-mesh sieve, in order to remove pulverized particles and dust.

Four digestions were carried out on each sample by the following methods:—

1. 'Fractional', or double-stage soda method.
2. 'Fractional', or double-stage sulphate method.
3. 'Overhead', or single-stage soda method.
& 4. 'Overhead', or single-stage sulphate method.

In the sulphate methods, the cooking chemicals used were caustic soda and sodium sulphide in the proportion of two to one.

A series of digestions were first carried out to fix the conditions of digestion, both by the 'Fractional' and 'Overhead' methods, and the conditions adopted finally for the digestions were as follows:—

A. *Fractional Method:*—

(*a*) First stage digestion:—

1. Caustic soda on the weight of air-dry chips	10%
2. Concentration of the solution	15 gm. per litre.
3. Maximum temperature of digestion	121° C.
4. Duration of digestion	2 hours

(*b*) Second stage digestion:—

1. Caustic soda (or a mixture of caustic soda and sodium sulphide in the proportion of 2 to 1) on the weight of air-dry chips	18%
2. Concentration of the alkali solution	60 gm. per litre.
3. Duration of digestion	3 hours,
4. Temperatures employed for digestion	162°C for the first ½ hour and 148°C for the remaining period.

B. *Overhead Method:*—

1. Caustic soda (or a mixture of caustic soda and sodium sulphide in the proportion of 2 to 1) on the weight of air-dry chips	18%
2. Concentration of the alkali solution	60 gm. per litre.
3. Duration of digestion	7 hours.
4. Temperature employed for digestion	162°C for ½ hour and 148°C for the remaining period.

The results of digestions are tabulated in Appendices I, II, III, and IV.

Digestions by the 'fractional' sulphate method, as described above, were also carried out on 'T. P. M.' and 'I. P. M.' chips, after crushing them by hammer on an

anvil. The results of these digestions are tabulated in Appendix V. for comparison, the results of digestion on uncrushed chips, given in Appendix II, are also tabulated.

Digestions were also carried out by the acid sulphite process on 'I. P. M.' chips, both in the crushed and uncrushed state. The conditions of digestion employed were as follows:—

1. Calcium bisulphite cooking liquor—
   Free sulphur dioxide (SO_2) 2.19%
   Combined sulphur dioxide (SO_2) 0.98%
   Total sulphur dioxide (SO_2) 3.08%
2. Maximum temperature ..... 162°C
3. Time to reach maximum temperature ..... 8 hours
4. Total duration of digestion ..... 12 hours

The results of two digestions are tabulated in Appendix VI.

The bleach consumption for each sample of unbleached pulp was determined as follows:—

Bleaching powder solution, containing a definite quantity of bleaching powder, was added to the sample, and the bleaching action allowed to proceed for a fixed period. At the end of this period, the pulp was filtered and washed under suction, and the quantity of bleaching powder remaining in the filtrate was determined by titration. The bleaching powder consumed by pulp was thus ascertained, and the percentage consumption on the raw material (bamboo chips) was calculated.

Discussion of the Results of Digestion and Bleaching

It will be seen from Appendices I, II, III, and IV that, from the point of view of *(a)*, the uniformity of pulp, *(b)*, the percentage yields of unbleached pulps, bamboo chips which were thoroughly crushed gave the best results.

The 'B. P. M.' chips not only yielded the highest percentage of both unbleached and bleached pulps, but the quality of the pulps was more uniform. The unbleached pulp was much lighter in color than the unbleached pulps from either the 'T. P. M.' or 'I. P. M.' chips; it left practically no screenings, and bleached to a good white shade, under the conditions employed for bleaching. The bleached pulp showed no shives whatever.

The 'I. P. M.' chips, which were not crushed at all, yielded the least percentage of unbleached and bleached pulps. Unbleached pulps from the chips were darker in color than those obtained from the 'B. P. M.' chips, and those prepared by the 'overhead' method contained a number of shives, which persisted even after bleaching. Under the conditions employed for bleaching, these pulps bleached only to a dull white shade.

The yields of unbleached and bleached pulps from the 'T. P. M.' chips were only slightly less than those from the 'B. P. M.' chips, but the color of the unbleached pulps was in all cases much darker. The pulps bleached (under the conditions of bleaching employed) only to dull white shade, and both unbleached and bleached pulps, particularly those obtained by the 'overhead" method of digestion, contained a number of shives.

Under the conditions employed for bleaching, the percentage consumption of bleaching powder was the least with the 'I. P. M.' chips, and highest with the 'T. P. M.' chips. The 'B. P. M.' chips required only a slightly higher percentage of bleaching powder than the 'I. P. M.' chips. When, however, the pulps from the 'I. P. M.' chips were bleached to the same shade of whiteness as those from the 'B. P. M.' chips, the percentage consumption of bleaching powder was found to be less for the 'B. P. M.' chips.

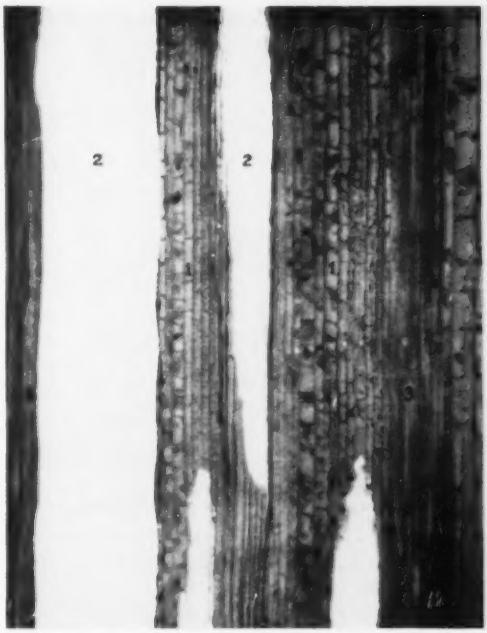

Figure 3—Longitudinal section of internode of Dendrocalamus strictus showing (1) Parenchymatous tissues (2) Vessels (3) Fibres. (X 110).

The digestions of the 'T. P. M.' chips, after thorough crushing by hammer, and using the sulphate process for the 'T. P. M.' chips, and both the sulphate and sulphite processes for the 'I. P. M.' chips, resulted *(a)* in increased percentage yields of both unbleached and bleached pulps for the 'I. P. M.' chips, and *(b)* in appreciable reduction in the percentage consumption of bleaching powder for both the 'I. P. M.' and 'T. P. M.' chips (vide Appendices V and VI).

Explanation of the Results of Digestion

The above results of digestions, showing increased yields of more uniform and more easily bleachable pulps for crushed bamboo chips, than for uncrushed chips, can best be explained by a brief study of the structural characteristics of bamboo stems and of the mechanism of penetration of liquors into the chips.

A transverse section of a bamboo stem (Fig. 1) shows that there is a large number of fibro-vascular bundles scattered throughout the ground tissue (parenchyma). Near the waxy and siliceous epidermis, the bundles are very numerous and so closely packed that there is

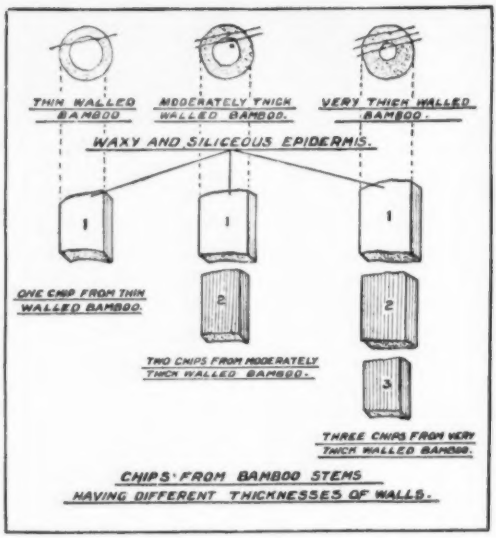

Figure 4—Chips from Bamboo Stems Having Different Wall Thicknesses.

hardly any surrounding ground tissue. Towards the inner periphery, the bundles are much more widely spaced.

A single fibro-vascular bundle consists of a thick bundle sheath, composed of fibres, inside which are vessels, phloem tissue, and ground tissue (Parenchyma, Fig. 2). It may also be noticed (Fig. 3) that the typical ray parenchyma, found in dicotyledonous (broad-leaved) and coniferous (needle-leaved) trees, are absent in bamboos, and that all the fibres and vessels run longitudinally, more or less parallel to the axis of the stem.

In chips cut obliquely from uncrushed bamboo stems, therefore, the only channels through which liquor can move are the vessels lying parallel to the length of the chips, and communication to adjoining tissues is practically non-existent. The chemical action of cooking liquors on the lignin of the fibre walls, can, therefore, be but very retarded, after having to pass through these vessels and overcome air locks within them. The main dissolving action of the cooking liquors on the lignin of the fibre walls in such chips, consequently, takes place by the gradual penetration and solution of the exposed facets or surfaces of the chips, consisting of ground tissue (parenchyma) surrounding the fibres. A certain proportion of the exposed facets or surfaces of the chips will be difficult to penetrate as they will consist of the highly waxy and siliceous epidermis and closely packed fibro-vascular bundles underneath it. The proportion of such resistant surfaces to the total surface area of the chips will depend on the thickness of the walls of the stems as shown in the diagrams in Fig. 4.

In thin walled stems, the proportion will be very high, in as much as almost every chip will be an outer piece and will have the resistant siliceous epidermis on its surface. In comparatively thicker walled stems, the wall may be cut into two chips, of which only one may have some siliceous epidermis and the other none. In this case, the proportion of the resistant surface to the total exposed surface area, would be less. In very thick walled bamboos, the proportion of the resistant epidermal surface will be still less as the bamboo wall may be cut into three or more chips, of which only onewillhave some resistant epidermal surface.

The penetration of the cooking liquors and their chemical action on the chips is thus dependent on the resistance offered by *(a)* the existing epidermal surface and the closely packed fibro-vascular bundles; *(b)* the rigidity of the bundle sheaths and *(c)* the compounds formed as a result of the chemical action of the liquors on the ground parenchymatous tissue.

In chips obtained from crushed stems of bamboos, the conditions for the penetration of cooking liquors and their chemical action are entirely different. In the process of crushing, the waxy and siliceous epidermis is broken up and the closely packed fibro-vascular bundles are considerably loosened, if the crushing is thorough. Further, the crushing pressure loosens and separates the bundle sheaths from the surrounding ground tissue, and numerous irregular cracks are formed in the latter, providing channels for the penetration of the liquor. The rigidity of the bundle sheaths is also considerably loosened as a result of the crushing pressure. The numerous longitudinal cracks thereby formed along the vessels, fibres, phloem and ground tissues, thus provide a number of channels for the passage of the cooking liquor and its penetration into the inner recesses of the chips. The only appreciable resistance offered is that of the colloidal and slimy compounds formed as a result of the chemical action of the liquors on the ground tissue.

It will thus be seen that resistance to the penetration of liquor is considerably more in uncrushed chips than in crushed chips. The result is that, while with uncrushed chips the chemical action of the cooking liquors during the period of digestion is more drastic on the outside surfaces of the chips than on the inner portions, in crushed chips the chemical action is more or less uniform throughout the chips.

The easier penetration of liquors in crushed chips than in uncrushed chips was confirmed by the following two simple experiments:—

(1) Crushed and uncrushed chips were immersed in a colored solution. In the crushed chips, the colored liquid entered quickly along the cracks and, within about half an hour, the whole crushed chips presented a soaked appearance. The uncrushed chips did not present such an appearance even after 24 hours.

(2) Crushed and uncrushed chips were boiled separately with water in conical flasks provided with air condensers. Whilst the crushed chips sank to the bottom of the flask in about 2 hours 20 minutes the uncrushed chips took nearly 6½ hours to sink, thereby showing that the penetration of water into the uncrushed chips was considerably retarded.

The results of digestions of thoroughly crushed, partially crushed, and uncrushed chips can therefore, be explained in light of the above brief description on the mechanism of penetration of cooking liquors into bamboo chips.

With crushed chips, the resistance, due to the waxy and siliceous epidermis and the closely packed fibro-vascular bundles, is less, and the presence of numerous cracks and channels allow a speedy and thorough penetration of the cooking liquor into the inner recesses of the chips. The result is that the chemical action of delignification of the fibres, takes place more or less evenly throughout the chips, and a well-digested uniform pulp is obtained which needs the optimum quantity of bleaching powder for being bleached to a good white shade.

In uncrushed chips, resistance is offered to the penetration of the cooking liquor into the inner recesses of the chips by the undamaged siliceous epidermis, by the rigidity of the bundle sheaths, and by the colloidal compounds formed by the interaction of alkalies with the ground tissues. The result is that the surfaces of the chips and the portions immediately below, are subjected to a longer and therefore more drastic action of the chemicals than the inner portions of the chips. The cellulose in these parts is inevitably hydrolyzed to some extent by the drastic chemical action. The passage of cooking liquors to the inner recesses of the chips is considerably retarded, and these portions are either just digested or remain partially undigested. The net result is that the pulp obtained is not uniform, and the total yield is reduced, since part of the chips is overdigested and part is, at best, just digested. The total bleach consumption is about the same as for crushed chips, since the excess bleach required for the partially uncooked portions of the chips is counterbalanced by the reduced bleach requirements of the overdigested portions.

In the case of partially crushed chips, the penetration of the cooking liquor to the inner recesses of the chips is bound to be less uniform and thorough than in thoroughly crushed chips, but more so than in the case of uncrushed chips. A very small portion of the chips may get overdigested, whilst an equally small portion of the chips may remain only partially digested. The net result to be expected from such action would be a yield of pulp not quite uniform in quality but about as good as that of crushed chips. The bleach consumption of the pulp is bound to be higher than that for crushed and uncrushed chips, since in such chips there would be a certain proportion of partially digested pulp, and the proportion of overdigested pulp would be inappreciable.

Conclusion

The autoclave digestion of three kinds of bamboo chips, namely *(a)* thoroughly crushed, *(b)* partially crushed and *(c)* uncrushed, show that from the point of view of uniformity of pulp, percentage yields of unbleached and bleached pulps, and bleachability, the thoroughly crushed chips give the most satisfactory results. From a practical point of view, however, thorough and complete crushing, or even partial crushing, of bamboo stems possess the following disadvantages:—

(1) The power consumed is, comparatively, much more than required for merely chipping bamboos and (2) the sizes of thoroughly crushed or partially crushed and cut chips are, comparatively, more irregular and uneven than those of chips obtained by the oblique chipping of bamboos.

An ideal method for preparing chips for digestion, would be to cut the bamboo into more or less uniform chips, and then crush the chips thus obtained, so that not only the nodes and siliceous epidermis would be crushed, but the bundle sheaths of the fibro-vascular bundles would be loosened and separated out from the ground tissues and their rigidity considerably reduced, thus providing channels for the speedy and easy penetration of the cooking liquor into the inner recesses of the chips. It is doubtful, however, if such a method could be realized in large scale practice.

APPENDIX I. *"Fractional" Soda Process*

Sample of bamboo chips	First-stage digestion: NaOH on chips (air-dry), %	First-stage digestion: Concentration of cooking liquor, gm/liter	First-stage digestion: Duration & temperature of digestion	Second stage digestion: NaOH on chips (air-dry), %	Second stage digestion: Concentration of cooking liquor, gm/liter	Second stage digestion: Total duration of digestion, Hours	Second stage digestion: Duration and temperature of digestion	Consumption of NaOH on chips, %	Yield of unbleached pulp on chips (air-dry), %	Consumption of bleaching powder (35% available chlorine) on chips (air-dry), %	Yield of bleached pulp on chips (air-dry), %	Remarks
B.P.M.	10	15	121°C for 2 hours.	18	60	3	162°C for ½ hour, 148°C for the remaining period.	7.44	38.91	7.34	37.63	Well digested and uniform unbleached pulp, light grey in color. Bleached to a good white shade.
T.P.M.	"	"	"	"	"	"	"	6.16	38.33	8.72	37.00	Fairly well digested unbleached pulp, much darker in color than the B. P. M. pulp above. Bleached only to dull white shade.
I.P.M.	"	"	"	"	"	"	"	7.11	33.40	6.92	32.51	Fairly well digested unbleached pulp, slightly darker in color than B. P. M. pulp above. Bleached to slightly dull white shade.

APPENDIX II. *"Fractional" Sulphate Process*

Sample of bamboo chips	First-stage digestion: NaOH on chips (air-dry), %	First-stage digestion: Concentration of cooking liquor, gm/liter	First-stage digestion: Duration and temperature of digestion	Second stage digestion: Alkali used on chips (air-dry): NaOH, %	Second stage digestion: Alkali used on chips (air-dry): Na_2S, %	Second stage digestion: Alkali used on chips (air-dry): Total, %	Second stage digestion: Concentration of cooking liquor, gm./liter	Second stage digestion: Total duration of digestion (Hours)	Second stage digestion: Duration of temperature of digestion	Yield of unbleached pulp on chips (air-dry)	Consumption of bleaching powder (35% available chlorine on chips (air-dry), %	Yield of bleached pulp on chips (air-dry), %	Remarks
B.P.M.	10	15	121°C for 2 hours.	12	6	18	60	3	162°C for ½ hour & 148°C for the remaining period.	40.40	7.00	38.63	Well digested and uniform unbleached pulp, very light grey in color. Bleached to good white shade.
T.P.M.	"	"	"	"	"	"	"	"	Do.	40.56	9.1	38.87	Well digested and uniform unbleached pulp, darker in color than the B. P. M. pulp. Bleached to dull white shade.
I.P.M.	"	"	"	"	"	"	"	"	Do.	34.10	5.3	33.10	Well digested and uniform unbleached pulp, very nearly approaching the above B. P. M. pulp in color. Bleached to a fairly good white shade.

APPENDIX III. *"Overhead" Soda Process*

Sample of bamboo chips	NaOH on chips (air-dry), %	Concentration of cooking liquor, gm/liter	Consumption of NaOH, %	Total duration of digestion, Hours	Duration and temperature of digestion	Yield of unbleached pulp on chips (air-dry), %	Consumption of bleaching powder (35% available chlorine) on chips (air-dry), %	Yield of bleached pulp on chips (air-dry), %	Remarks
B.P.M.	18	60	13.00	7	162°C for 1 hour & 148°C for the remaining period.	44.16	11.75	42.22	Well digested and uniform unbleached pulp, dark grey in color. Bleached to fairly good white shade.
T.P.M.	"	"	11.84	"	"	42.37	15.00	40.11	Pulp slightly under-digested. Unbleached pulp was much darker in color than the B. P. M. pulp above, and contained some shives. Bleached to slightly dull white shade.
I.P.M.	"	"	12.60	"	"	38.89	12.00	37.08	Pulp slightly under-digested. Unbleached pulp was slightly darker in color than the B. P. M. pulp above, and contained a number of shives, which did not fully bleach.

APPENDIX IV. *"Overhead" Sulphate Process*

Sample of bamboo chips	Alkali used on chips (air-dry): NaOH, %	Alkali used on chips (air-dry): Na_2S, %	Alkali used on chips (air-dry): Total, %	Concentration of cooking liquor, gm/liter	Total duration of digestion, Hours	Duration and temperature of digestion	Yield of unbleached pulp on chips (air-dry), %	Consumption of bleaching powder (35% available chlorine) on chips (air-dry), %	Yield of bleached pulp on chips (air-dry), %	Remarks
B.P.M.	12	6	18	60	7	162°C for 1 hour & 148°C for the remaining period.	45.13	12.5	42.22	Well digested and uniform unbleached pulp, darkish grey in color. Bleached to good white shade.
T.P.M.	"	"	"	"	"	"	42.39	14.5	39.88	Pulp slightly under-digested unbleached pulp darker in color than the B. P. M. pulp above, and contained some shives. Bleached to fairly white shade.
I.P.M.	"	"	"	"	"	"	38.75	10.3	36.87	Pulp slightly under-digested. Unbleached pulp only slightly darker in color than the B. P. M. pulp above, and contained a number of shives which could be bleached only partially.

APPENDIX V. *"Fractional" Sulphate Process*

Sample of bamboo chips	First-stage digestion: NaOH on chips (air-dry), %	First-stage digestion: Concentration of cooking liquor, gm/liter	First-stage digestion: Duration & temperature of digestion	Second stage digestion: Alkali used on chips (air-dry): NaOH, %	Second stage digestion: Alkali used on chips (air-dry): Na_2S, %	Second stage digestion: Alkali used on chips (air-dry): Total, %	Second stage digestion: Concentration of cooking liquor, gm/liter	Second stage digestion: Total duration of digestion, hours	Second stage digestion: Duration & temperature of digestion	Yield of unbleached pulp on chips (air-dry), %	Consumption of bleaching powder (35% available chlorine) on chips (air-dry), %	Yield of bleached pulp on chips (air-dry), %	Remarks
B.P.M.	10	15	121°C for 2 hours.	12	6	18	60	3	162°C for ½ hour & 148°C for the remaining period.	40.56	9.1	38.87	Unbleached pulp, grey in color. Bleached to dull white shade.
T.P.M.	"	"	"	"	"	"	"	"	Do.	39.08	4.8	38.63	Unbleached pulp lighter in color than the T. P. M. pulp above. Bleached to a brighter shade than the above T. P. M. pulp.
I.P.M.	"	"	"	"	"	"	"	"	Do.	34.10	5.3	33.10	Unbleached pulp light grey in color. Bleached to a fairly good white shade.
I.P.M. (crushed by hammer)	"	"	"	"	"	"	"	"	Do.	37.13	4.75	36.50	Unbleached pulp lighter in color than the I. P. M. pulp above. Bleached to a good white shade.

APPENDIX VI. *Sulphite Process*

Sample of bamboo chips	Composition of cooking liquor: Free SO_2, %	Composition of cooking liquor: Combined SO_2, %	Composition of cooking liquor: Total SO_2, %	Maximum temperature, °C	Time to reach maximum temperature, Hours	Total duration of digestion, Hours	Yield of unbleached pulp on chips (air-dry), %	Consumption of bleaching powder (35% available chlorine) on chips (air-dry), %	Yield of bleached pulp on chips (air-dry), %	Remarks
I.P.M.	2.19	0.89	3.08	162°C	8	12	....	....	....	Under-digested pulp containing a large number of uncooked pieces. The partially digested pulp could not be bleached within economic limits. Due to large percentage of screenings, yield of unbleached pulp was not determined.
I.P.M. (crushed by hammer)	"	"	"	"			42.25	8.32	40.43	Well digested, nearly uniform and light colored pulp. Bleached to a good white shade.

Conveyors—The Arteries of Production*

By C. L. MOON

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The first commercial use of conveyors occurred in this country about the year Eighteen Hundred and Eighty. This use was in connection with grain elevators. Shortly thereafter there followed the use of conveyors in mining operations, and subsequently in cement plants and industrial power plants. The first industrial use of conveyors, therefore, was for the handling of bulk materials, the conveyors being simply the medium of transportion and confined generally to power house installations. The function of the conveyor in this case was simply that of a work horse, that is, it was exclusively a labor or time saver and performed no function other than bringing material from one place to another. The decision to purchase this type of equipment was based on the amount of saving that could be made in the non-productive payroll. Not only was no other factor considered, but it was not suspected that any other factor was even remotely involved. Thus, conveyors got their foot, so to speak, into industry's back door. From the handling of bulk materials in transportation, it was a logical step to the handling of so-called packaged materials or individual parts or articles within the plant. While the handling of bulk materials had been accomplished by the use of belt conveyors and bucket elevators, this second use of conveyors called for new types of design. These covered broadly the slat or platform type conveyor, the slider belt type conveyor, and numerous forms of so-called chain conveyors. The roller conveyor

* Presented at Materials Handling Meeting Manufacturers Conference, Westinghouse Elec. Corp., Buffalo, N. Y.

was developed during this same period for use in lumber yards and brick plants. This development and use of conveyors for the transportation of bulk materials and packaged articles or parts in industry took place in the opening years of the Twentieth Century. Generally, only the most obvious cases received attention. There was no science as yet, in conveyor design and installation was usually accomplished by an ingenious mill-wright working with a selection of standardized items secured from the local mill supply houses. These installations, of course, were crude and followed no set pattern, each individual application being the product of the caprice, whim or idiosyncrasy of the builder or determined and limited by the gears, sprockets, and chain readily available. This then, was about the status of industrial conveyor use up to the time that the automobile industry loomed on the horizon as the first potentially important mass producer. It is generally agreed that the first important application of conveyors to a manufacturing operation was made by Henry Ford about the year 1912 or '13 when he installed the first conveyorized assembly line. From that point forward, the development of the science of conveyors has marched side by side with the overall development of mass production technique, the one dependent upon the other, and now the two inseparably intertwined. The major requirements of this technique are, of course, volume and standardization, and the automobile industry gave generously of both. Here then, was the workshop where a great many of our modern manufacturing techniques were developed and this is particularly so in the field of conveyors. The basic idea of assembly in motion was nothing short of an industrial revolution in itself. The modern manufacturing pattern for which the die was cast when this first assembly conveyor was put into operation is a very far cry from the industrial pattern which prevailed at that time. The most advanced and modern stage of this development exists in some of the latest plants designed and built for the war program and dedicated to a single purpose. The road to this achievement has been long and arduous with the period of greatest development and accomplishment beginning at the close of World War I and continuing to the present time.

The adoption by industry of conveyorized assembly along with the development of scientific shop management by Taylor and others have had profound influence upon our industrial pattern. The results obtained by conveyorized assembly were so spectacular that efforts were made to apply the same principles to the other manufacturing operations. It is strange that this first conveyor application was made at the tail end of the manufacturing cycle, however, final assembly was giving a great deal of trouble to the motor car makers and they naturally attacked the most critical spot first. While the first objective in industrial conveyor use had been the reduction of nonproductive labor payroll, it was soon realized that here also was a tool which could also have a profound effect upon productive payroll as well. This effect, however, did not necessarily entail reduction in the production labor payroll, except indirectly by the means of enormously increasing the worker's productivity. In other words, more and more cars began to be produced without adding to the number of workers. This development took place in the main, in the period following World War I. It was during this same period, of course, that the automobile industry experienced its greatest growth and, of course, this was a very fertile field for the development of this new technique. The increased competitive pressure for higher quality and lower cost was a driving force that produced amazing results. During this time conveyors slowly became integrated into the whole manufacturing operation so that they now cover extensively the field of transportation now broadened to cover the receipt, storage, and distribution of raw materials, the various processing operations, such as heat treating, plating, painting, etc., all of the subassembly and final assembly operations, and, in many instances through to the shipping of the completed product or article. In a modern plant, conveyors have become such an integral part of the manufacturing process that it is difficult to separate them from the rest of the equipment, and even more difficult to imagine modern manufacturing activity being conducted without their use. The conveyor system in its highest form of development is truly the artery of production. Thru these veins flow, at pre-determined speeds and at regular intervals, the raw materials and the component parts of the finished product, the basic manufacturing operations in each case being broken down into relatively simple units of work so that the major skills have been greatly simplified. Operations are so timed and synchronized that an even, uninterrupted flow, without bottle necks, is achieved. The quality of work is greatly increased because individual responsibility has been lessened, the functions and duties of each individual have been clearly defined, each worker having a definite job to do and a prescribed time in which to do it. This breakdown makes for easy control, both of the volume of production and also of the quality of the product. The function of proper inspection is greatly simplified by virtue of the work being broken down into simple units. In this way, faulty work can be discovered before any serious amount of harm is done. The most important factor, however, is the fact that the opportunity for doing poor work is greatly minimized by the reduced skill requirement of the operation. The fact that everything travels over a predetermined route means that an accumulation of parts or banks of material stored on the floor or in containers is entirely eliminated. This not only makes a tremendous improvement in general housekeeping but it makes a substantial reduction in work-in-process inventory. All of these factors add materially to cost reduction and overall manufacturing efficiency without reducing the earnings of workers. As a matter of fact, many of the most modern plants have, at this time, the lowest unit labor cost coupled with the highest individual worker earnings. This, of course, is a very desirable condition from every standpoint. While the original incentive for conveyor installations was reduction in payroll, the process of evolution thru which this science has passed during its period of recent development has added to it, countless other benefits, both tangible and intangible which appear to be of even greater importance than that which was attached to the original objective.

It is a generally known fact that war always leads to an accelerated technological development. The impetus which we received from World War I carried us into the expansion period of the Twenties. Let us hope that the impetus which we have received from World War II will carry us into a period of activity which will have a far happier ending and I may say that I have every hope that it will. It is not to be considered that the period of development just recently referred to is by any means complete, nor is it to be assumed that the scien-

tific use of conveyors has invaded all of the fields where it can be profitably applied. Although the progress made between the two wars was substantial, there are still some industries with a goodly number of concerns who have not adopted, or at best, who have been very slow to adopt the new techniques. This may be attributed to a number of reasons, among which stands out rather too prominently the attitude that "My business is different." This, too many times, has acted as a smoke screen behind which many an ultra conservative management has clung doggedly to the status quo. This attitude, however, is more particularly true of some of the old line industries where ownership and/or management has now succeeded to the second or even in some instances, to the third generation. Another reason, is the scarcity of competent personnel within industry capable of doing the job. The answer to the first group is simple. If they insist upon maintaining the status quo long enough, the law of economics will deal with them. The second group, that is, those who are willing but do not consider they have the means of bringing about the end, will be taken care of when management is made more familiar with the help that is available from without the industry.

Proper conveyor application is, of course, an integral part of proper plant layout. In order to assure the greatest benefit from conveyor use, conveyor engineers, at least, the most competent and the most alert ones, have become experts in plant layout. Great progress has been made by the cooperative efforts of these men and the men within industry. Some of the modern World War II plants just referred to give eloquent testimony of this. In many cases, plants were geared up for mass production for the first time. This opened up to them entirely new vistas in the field of manufacturing and has been a tremendous impetus to vast improvements and changes in the postwar period. An intelligent understanding and application of these principles is essential to the healthy growth, development, and prosperity of every industrial enterprise.

Hazards Encountered in the Chemical Pulp Industry

By R. CHAPMAN

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Sulphite Process

Handling Limestone from cars or trucks to dumps involves some manual handling unless it can be dumped from gondola cars onto dump trucks. If necessary to throw it over the sides of the freight car, workers should have foot and shin guards as well as heavy glives, especially if the stones weigh up to 100 lbs. Correct lifting methods and footing are very important but often hard to achieve when standing on the rough stone. Hence the hazard of back strains and hernia is ever present. These conditions are aggravated under winter conditions and call for close supervision and for workers of rugged physique.

Getting the Limestone to the Top of the Absorption Towers—Whether a skip hoist or a narrow gauge rail car is used, the carrying device is usually filled manually and the above precautions have to be taken. When the latter conveyance is elevated to the top of the towers on a standard freight elevator, the rail car must be chocked to prevent movement and keep stone from being spilled down the shaft.

Dumping stone into the towers does not present any great hazard; but when removing tower covers the operators must make sure that the gas is syphoned or exhausted away from the opening before the lid is raised. Two operators equipped with gas masks should be on hand when covers are removed or replaced. In fact, any person required to work in this area should have a mask. Furthermore, one should be carried on the acid tower elevator at all times as a precaution in the event the elevator becomes stalled between floors; a ladder inside the elevator shaft should be provided for the same contingency. Some mills require workers to wear a safety belt when removing covers to prevent their falling into the tower when the cover is off.

[1] Presented at a meeting of the Pulp & Paper Section, National Safety Council.

Breaking Down Stone and Cleaning and Repair Work Inside Stone Towers—All acid and gas lines should be blanked off and the tower washed out and well ventilated before workers are allowed to enter it. Taking out and relining towers is a special type of work which will not be discussed here.

Sulphur Burning—Preparation of sulphur for burning, whether in powder form or in molten state, calls for precautions to prevent dust explosions or fires. Tanks holding molten sulphur must be kept from overflowing as they are usually above the operating floor.

When unplugging with compressed air pipes conveying molten sulphur or working on sulphur lines, valves or tank outlets workers should wear the following protective clothing: brimmed hat, rubber coat, pants and boots (with pants over the boot tops), gloves, and eye and face protector.

Sulphur Storage and Handling has been very well covered in Industrial Data Sheet D-P.P-5, and will not be discussed here.

Cleaning Acid Making Equipment—Burners, coolers and fan are cleaned during a shutdown period and the work does not present any special hazards unless burners are still hot.

Acid Storage Tanks—Wooden tanks need careful inspection and maintenance to prevent hoops from being corroded to the point where the tank could collapse. A breather pipe should be provided, and as it can freeze up on shutdowns should be kept clear to prevent the cover from lifting. The release of a large volume of gas might have serious results.

Tank Cleaning and Repair—Workers should not be allowed to enter tanks until after the tanks have been thoroughly washed and ventilated. All connecting pipe lines should be blanked off. Men entering tanks should be equipped with gas masks and wear a safety belt.

Fellow employees should stand watch at the manhole until conditions inside have been established to be safe.

Digester Operations—Careful thought and handling is required of cooks and their helpers especially when operating steam, hot acid and gas valves to make sure they are right. When the digester is being filled with chips, it is often necessary for men to go into the bins to break down an arch. If steam is used for this same purpose, make sure it is shut off before men enter the bin, and see that the men are equipped with a safety belt and line. One man should not be allowed to work alone; there should be a second man above the bin to give help and spread an alarm in case of need.

Inspection of digesters for faulty linings or plugged and damaged fittings is often done between cooks by "coming up on the chips" and requires all valves or lines connected to the digester to be locked and tagged or blanked off. All persons in the digester house should be informed of the inspection. Men entering the vessel should be equipped with a gas mask and wear a safety belt and line. A watch should be posted at the digester opening.

Blow Valves should be kept locked while cooking chips and the key retained by the cook until needed by the helper at blowing time. It is the helper's responsibility to make sure that the hand plate is bolted down and that there is no water or acid in the blow pipe. Also he must notify the blow-pit man and see that pit doors have been closed.

Blow-Pits—All blow-pit doors must be battened down before a blow, after checking to see that no repair men are in the pit. All persons working near the pit should be warned to keep away and avoid the fumes. Pit openings should be guarded so that persons cannot fall into them. Equipment such as ladders used for descending into pits need to be carefully inspected due to the corrosive action of acid, especially hemp rope ladders. When high pressure water hose is used to wash stock out of pits it is advisable to harness the hose to prevent injury to the user when working through pit openings. Open drains in the blow-pit room should be covered to keep men from stepping into hot blow liquor. Wooden platforms and steps are usually wet and very slippery unless covered with old felt or other slip resistant material.

Knotters, Screening, Rifflers and Filters—Slippery flooring, stairs, flow-box covers and planking are a source of falls, especially when pulling hose for washing purposes. Only rubber boots with unworn treads should be worn. When washing-up flowboxes, screens, etc., there is hazard in raising the heavy wooden covers which are usually slippery. Where practical covers should be provided with handles or ring bolts. When flat screens are raised for wash-up and repair they must be handled carefully. In addition to the tackle used for raising screens they should be blocked up before working under or around them.

Bleaching—Using hypochlorite and chlorine gas in one or more stages demands good ventilation to exhaust fumes from the working area. All operators should have their own gas masks located where they are handy for quick use. Control valves for chlorine should be readily accessible and all lines identified by distinctive colors. Exits should be provided for quick retreat in the event of a gas leak. An alarm system should be installed for warning all operators in the area involved. All operators in this department need to be well trained in the safe handling of chlorine gas and aware of its dangers. This subject is covered by Safe Practices Pamphlet No. 71.

Where caustic or milk of lime are used for pH control the necessary precautions are called for in handling same, these are also covered by Safe Practices Pamphlet No. 25.

Lapping Wet Pulp and Drying Pulp

Lapping Pulp from wet presses calls for uniform size of laps and proper building of loads to prevent strain from overweight, and toppling of loads when they are being moved for piling or loading into cars. Due to heavy loads and wet conditions, floors in wet-press rooms should get close inspection and be kept in repair.

Drying Pulp—Here there is a hazard of fingers being caught in the nip point. Also arms or hands may be burned on the dryers when passing the sheet. This is a recognized hazard and calls for proper training. There should be special alertness when breaking in new operators or spares for holiday relief. Catwalks, steps, and hand holds should be located for convenient and practical operation and constructed to prevent slipping. All broke should be picked up around the wet end to prevent slipping or tripping.

Baling Presses, Handling, Piling and Shipping Baled Pulp—When bales are wired outside of the press, operators should wear goggles to prevent injury from wire ends. Bales should be carefully made uniform in size and closely wrapped so as to make piling easier and safer. Piles should lean away from aisles. Mechanical methods for handling, piling or loading baled pulp are usually more economical and safer than manual methods.

When piling bales in car doorways tiers facing the entrance should be chocked to prevent them from falling forward if the car is rocked by the loading truck. As tiers may topple over if cars are shunted during the loading process, loaders should be warned to keep out of cars. Braces are sometimes used to keep piles erect. Car plates and gangways should be of sufficient width and securely anchored.

Soda Pulp Process

Alkali Recovery—In soda and sulphate mills the make-up and recovery of chemicals used for cooking present much greater hazards than in sulphite mills. Caustic soda has to be treated with respect, being a very strong and active alkali. Whether received in tank cars or in drums as a solid this chemical requires careful handling. Handling caustics and unloading them from rail cars are covered by Safe Practices Pamphlets 25 and Chemical Industry Pamphlets 3 and 4.

If liquid caustic is received at 48°Be. it is usually added to the causticizing process and becomes diluted and, therefore, is handled at low strength. However, whether the solution is green liquor, white liquor, or black liquor, it is still caustic soda from the standpoint of chemical hazard. The fact that the liquid is being used at high temperatures adds to the need for greater care when working with it. Operators must protect their eyes above everything else. They must wear rubber clothing on clean-up and repair work and also when in an area where there is leakage from tanks, pipe lines, pumps and other equipment. Where soda ash is used as the make-up alkali there is not the same hazard in handling but the eyes and lungs need protection.

Lime Handling—Many mills are using burnt lime for

causticizing. This material has to be unloaded from box cars or trucks into the mill, a disagreeable job but not a hazardous one, even in the summer months, if the necessary precautions are taken. The right type of men should be picked for this work as some have tender skin, or a sinus or respiratory ailment. Dust masks can be made from layers of cotton batting between gauze. They are very light to wear and the pad can be renewed often. If forearms rub against thighs when shovelling and cause irritation or if burning of the skin starts due to perspiration, a coating of petroleum jelly on the skin is a very effective preventive. Generally speaking, persons with fair complexions are sensitive to lime dust and should not handle it.

Lime Burning and Slaking—Injuries connected with these operations are mostly burns caused by hot lumps, or powder from kiln, or splashing from hot milk of lime. There are points in any liquor recovery system where operators have to guard against hot material or equipment. In such places the eyes should always be protected. Deluge showers at convenient spots in the liquor recovery buildings are recommended. Workers should wear wide brimmed hats and rubber clothing should always be available.

Liquor Burning—Whether in rotaries or furnaces this operation calls for care on the part of operators to avoid coming in contact with hot equipment. Eye protection is very necessary when working around smelt or black ash.

Furnace and rotary rooms are dusty and alkali accumulates on pipes and beams; when disturbed it is not good for the eyes or the back of the neck.

Plugged pipe lines are a usual occurrence on these types of liquor and operators need thorough training in handling these emergencies with full consideration for their safety and that of others.

Cleaning smelt and black-ash tanks has its hazards and calls for close supervision, especially when men from a general labor pool are used who are not familiar with the danger of caustic burns. This would apply also to any tanks or equipment being cleaned around the liquor recovery system, such as boiler breaching, scrubbers, de-gassing tanks and precipitators.

Durham Installs Dravo Heater

To meet heavy demands for paper board used to make various kinds of boxes and cartons, the Durham Paper Board Co., Durham, Pennsylvania, near Riegelsville, recently increased its production 10 per cent by installing a unique warm air drying system in the drier section of the plant's 50-year-old paper manufacturing machine.

The idea of the system is to speed removal of moisture from the 60-inch-trim paper board as it travels over steam-filled drying drums. By discharging large volumes of warm air at high velocity through perforated tubes that run longitudinally between the drying drums, vapors are absorbed more readily and moist air is carried off more efficiently through exhaust fans in the hood that covers the drier section of the paper machine.

Peter Ferrara, plant manager, explained that it became necessary last spring to reduce the drying time in order to meet delivery schedules. Installation of a completely new paper machine with additional production capacity was not possible because of the shortage of such equipment. The firm, however, plans to install a new machine during 1949.

To solve the immediate problem, the warm air heating system was devised. Mr. Ferrara said the increased production more than compensated for the initial cost of installing the system.

Paper board enters the wet end of the drier section with about 65 per cent moisture content. This is reduced to 6 per cent during the travel through the 35 steam drums of the drier. The machine is operated 24 hours daily, six days a week.

Steam for the drying drums is supplied at 40 lbs. pressure from a fuel-oil fired boiler. Warm air, used for the supplementary drying system, is supplied by a Dravo Counterflo direct-fired heater equipped with a burner for No. 5 fuel oil. The heater is operated continuously, discharging 175-degree air into a 30-in. main duct. The heater is located in the plant's machine shop adjoining the room containing the drier section of the paper machine.

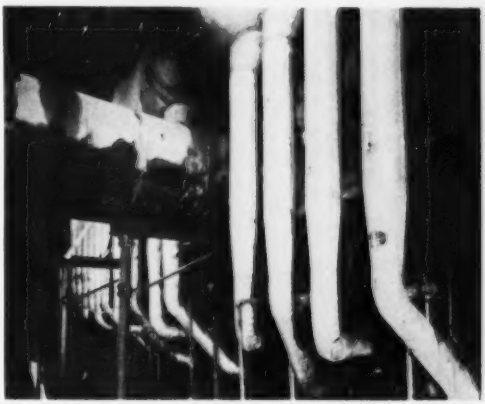

Figure 1—Warm air tubes are mounted on brackets between the steam drums. Perforations on three sides of the tubes direct the flow of warm air against the paper board. Exhaust fans pulling moisture-laden air away from the machine via the overhead hood operate more efficiently because additional supply of warm air sets up positive pressure.

To increase the normal air handling capacity of the heater, which is approximately 17,000 cu. ft. per minute, a booster fan was installed in the air supply duct on the base of the equipment. With a damper arrangement, either recirculated air from within the plant or fresh air from the outside can be supplied to the Dravo heater. In warm weather, fresh air is used almost exclusively while cold weather requires that some recirculated air be used to maintain the 175-degree temperature. Capacity of the heater is 1,500,000 btu per hour.

The main duct leading to the paper drier tapers in

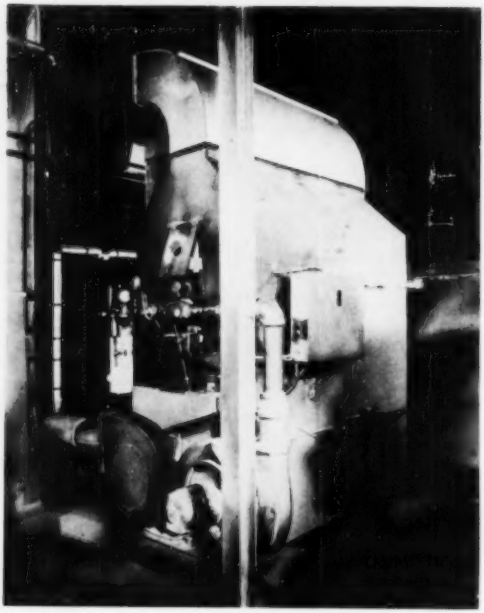

Figure 2—This Dravo Counterflo heater, equipped with a stainless steel combustion chamber, supplies the large quantities of high temperature warm air that have proved effective in speeding drying time of paper board at the Durham Paper Board Company. With this supplementary system, production has been increased 10 per cent, according to company officials.

size from 30-in. to 20-in. Eighteen 8-in. branch ducts lead from the main to 5-in. diameter perforated tubes between the steam drums of the drier. Each branch duct is individually dampered so the air flow can be shut off if one or more of the steam drums is out of service due to a broken pipe or for some other reason.

Each of the 5-in. tubes is 70 inches long and runs the full width of the drier section of the paper machine. The perforations are spaced about an inch apart in rows along three sides of each tube. Diameter of the holes varies in size to achieve uniform discharge of warm air.

There are three 48-inch exhaust fans in the hood over the drier section, each powered by a 3 hp. motor. These fans remove the moisture-laden air. Mr. Ferrara explained that the additional air discharged around the drying drums from the Dravo heater has increased the efficiency of the exhaust fans, giving positive pressure for more suction.

Despite its continuous operation at high temperatures, the Dravo heater has required little maintenance, Mr. Ferrara said. This he attributed mainly to the fact that the heater is equipped with a stainless steel combustion chamber that is resistant to corrosion caused by high temperatures. There is no refractory lining required in the combustion chamber, thus permitting rapid transfer of heat from flame to air.

In operation, the heater pulls air into its base by means of double centrifugal fans on a single shaft and powered by a 10 hp. motor. These fans force the air upward over staggered banks of economizer tubes located just below the combustion chamber in the path of the air. There are flue-gas twisters in the tubes to "whirlcool" the gases leaving the combustion chamber, thereby fully utilizing the heat before the gases are exhausted through the vent stack. After flowing over the economizer tubes, the air sweeps every square inch of the stainless steel combustion chamber before it discharges into the duct system.

Velocity of air discharge is approximately 2,000 ft. per minute.

Heater efficiency of 80 to 85 per cent is achieved in the Dravo unit by means of the "Counterflo" combustion principle. Starting at the burner, fuel oil and air are mixed, electrically ignited and sent swirling to the rear of the combustion chamber in a radiant flame. Then, in a second pass, the flame returns to the front of the chamber, providing a combustion path 2½ to 3 times longer than in an ordinary "single pass" chamber. This method, it was pointed out, gives more time and space for complete combustion and achieves uniform heating of the combustion chamber walls against which the air is flowing.

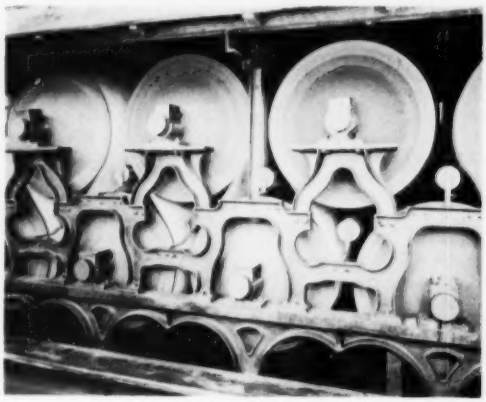

Figure 3—Closeup shows individual supply ducts from the overhead 30-in. main. They are connected to the eighteen 5-in. tubes that run between the steam drums of the drying section of the paper machine.

TECHNICAL DEVELOPMENT

Paper Trade Journal, in this section, makes space available for discussion of technical and operating problems. Space is also available for the presentation of independent studies and research on technical and engineering subjects. Feature stories of paper mills, converting plants and inter-related industries will be included. An invitation is cordially extended to all who are qualified to discuss these subjects. Original manuscripts submitted exclusively to Paper Trade Journal and found suitable for use in this section will be paid for immediately upon acceptance. Submit manuscripts to E. P. McGinn, Industrial Editor.

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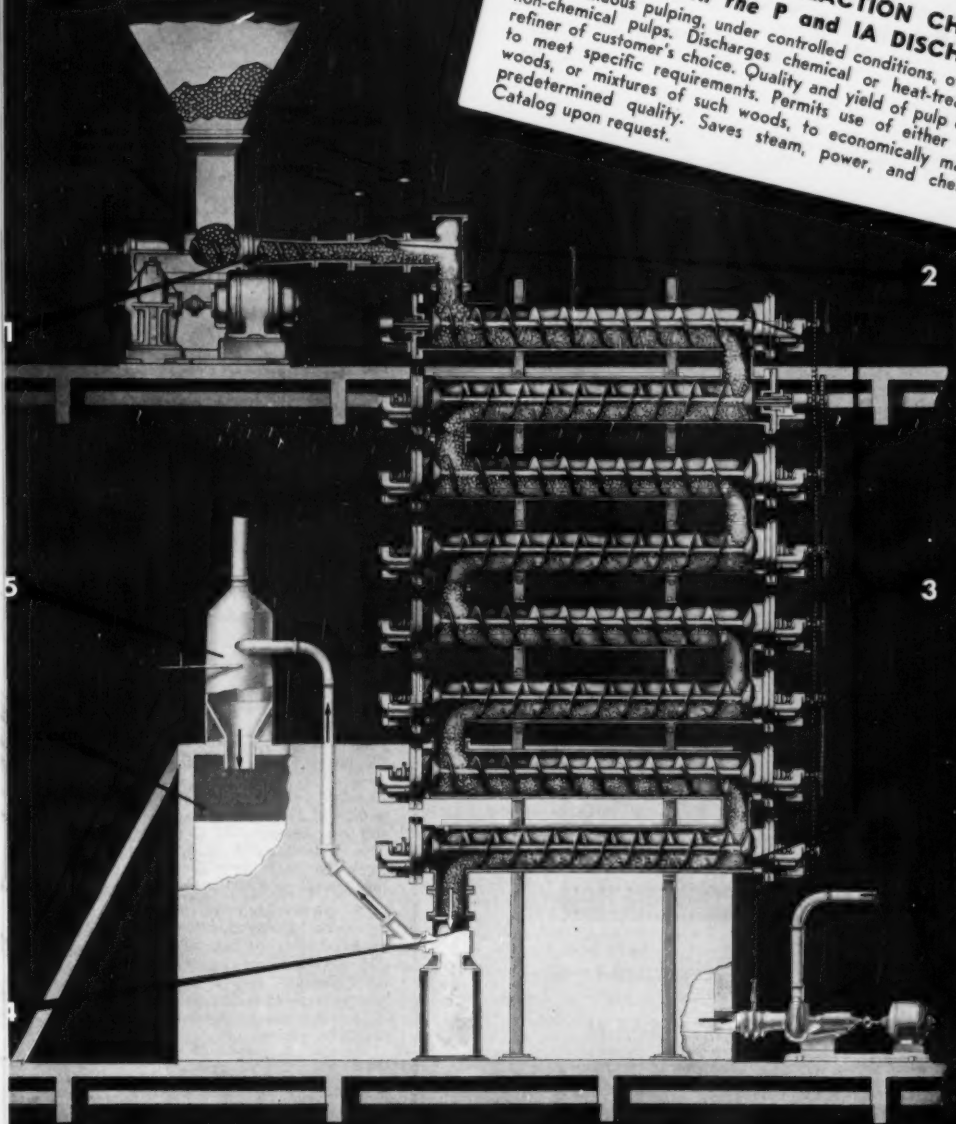

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Trends

Office of the PAPER TRADE JOURNAL,
Wednesday, February 23, 1949.

Business Yardstick

As a barometer of U.S. business activity during *dis-inflation*—described by Dr. Edwin G. Nourse, chairman of President Truman's Council of Economic Advisers, as the process which bring prices to a point "below the peak of inflation but above the general level of the pre-war period"—a New York economist suggests a study of important facts as clews in a business yardstick:

(1) *Unemployment.* Dun & Bradstreet reports that for the week ended February 5 continued claims for unemployment insurance increased almost 3 percent, initial claims rose almost 5 percent. Continued claims were almost 68 percent higher than a year ago. The year 1948, however, was the nation's peak year for employment, the Bureau of Labor informs.

(2) *Department Store Sales.* For the country as a whole, department store sales during the week ended February 12 were unchanged from like week of 1948, sales for the year being up 1 percent, according to the Federal Reserve Board. New York City sales declined 5 percent in the same week, with like decline for the year. Apparel store sales in the city took an 8 percent dip for the week, 9 percent for the year. During the week, leading midwest cities showed gains from 1 to 13 percent, Boston a gain of 9 percent, Philadelphia loss of 8, San Francisco down 11.

(3) *Freight Carloadings.* Total carloadings for the week ended February 12 gained over the previous week by 17,300, though 34,328 behind 1948's week and 100,535 back of 1947's. Miscellaneous carloadings gained more than seasonally over February 5, the Asso. of American Railroads announced, but were 3.1 percent behind 1948's week and 6 percent behind 1947's. Lcl's gain was 1411 from the previous week, though 11.2 percent behind 1948's week and 20.4 behind 1947's. Forest products jumped 2,088 to 31,536 for the week, but were 10.9 percent back of 1948's week and 36.7 behind 1947's.

(4) *Steel Ingot Production.* Week of February 12 was fourth in a row for the production of better than 100 percent of theoretical capacity, Chemical Bank TRENDS reports. Backlogs are said to be fairly constant with an equilibrium between supply and demand expected by midyear.

Current Trends

"Viewpoints as to current trends will be better balanced when special efforts are made to maintain proper perspective on what is taking place", writes

La Salle University's spokesman in "Business Bulletin" for February. "Comparison should be made not only with previous high points but also with previous lows, and with more nearly normal conditions than either. A decline in factory output from the present high level of about double prewar rate, or in retail sales from the current volume of close to three times, would still provide goods and services far above all previous normal periods". (Which again raises the fine point, "What is a normal period?") "As in the past", the writer states, "business could decline extensively without spiralling into a depression. Declines need not be considered unduly alarming, but may be constructive in that they may help correct some of the distortions which have developed. Changes even in the general average of trade and industry which take place in response to economic factors usually tend to restore balance and enable the normal exchanges of goods to go on. . . . Forces making for business and industrial expansion are powerful, and most of them show very few signs of weakening in any extensive way. Such signs could appear very quickly, however, as they have under similar circumstances in the past. For example, a sudden shift in consumer psychology could in a short time not only cause a rising trend to level off but, also, start it downward. Timing of such a reversal cannot be forecast with any high degree of accuracy, but changes in consumer buying will be watched very closely during coming months. . . . A fundamental fact to be kept in mind about prices is that they affect both consumption and production. Low prices discourage production and encourage consumption, while the problem of too-high prices in any field is that of increasing the supply of goods by larger production. Current indications are that price readjustments are likely to be more extensive during the next few months than during any previous time in the postwar period. If they can be made gradually in response to changing economic conditions affecting each commodity, they will be constructive and bring about better balance which will promote the exchange of goods and services. That condition is what makes prosperity."

Wood Pulp

The sudden shift of emphasis which marks the year 1948 had its early beginnings in the wood pulp market. When the year began, mills were asking: How much can U.S. mills count on getting from overseas? Before summer, the question had moved sharply to one of price. Intermediary steps which cover supply and price to the year's-end diminished buying are reported elsewhere in this issue. As the year closed, wood pulp trading had become a matter of wits: how much to buy, when to buy, and at what price.

Buying for first-quarter needs has consisted largely of taking in contract commitments at the new price levels, also shopping for such additional amounts required for immediate consumption. It is reported that this "shopping" has been profitable.

Second-quarter prices are awaited with expectancy. It is a well-known secret that Swedish prices will be lower. The "how-much" is of high interest to buyers and competitors. News item from Stockholm dated February 15 stated that Swedish producers will have to cut wood pulp prices "drastically" because U.S. consumers do not wish to buy at present prices. This more accurately stated is that U.S. consumers are unable to buy at present prices, on a competitive market with U.S. and Canadian product. Particularly is this a dominant fact when dealers and consumers are reportedly limiting their paper buying in the belief that price cuts are imminent.

Major Swedish importers are committed to announce their second quarter prices on March 1. It is generally expected that other Scandinavian producers will make known their contract prices shortly thereafter, and that the market will then settle to more normal form.

Table I
Canadian Newsprint Prices
(Del. at New York)

(Deld. at New York)

1925	$76.80	1937	$42.50
1926	70.00	1938	50.00
1947	70.00	1939	50.00
1928	67.50	1940	50.01
1929	62.00	1941	50.00
1930	62.00	1942	50.00
1931	57.00	1943	54.66
1932	48.33	1944	58.00
1933	41.25	1945	60.25
1934	40.00	1946	72.25
1935	40.00	1947	88.50
1936	41.00	1948	97.67

Table II
U. S. Price Index
Yearly Avg.

1932 = 100	Canadian Newsprint at N.Y.	General Commodity Index†
1933	85	102
1934	83	116
1935	83	123
1936	85	125
1937	88	133
1938	103	121
1939	103	119
1940	103	121
1941	103	135
1942	103	152
1943	113	159
1944	120	160
1945	125	163
1946	149	187
1947	183	234
1948	202	253*
1949	207*	245*

* Most Recent. † Dept. of Labor.

Table A
Waste Paper Market 1948
N. Y. Dealer Avg. Buying Prices
Dollars Per Ton

	No. 1 Hard White Shvgs.	Heavy Books & Mags.	No. 1 Mixed Paper	Folded News
Jan. 1	$110.00	nom.	$10.00	$13.00
Jan.	110.00	24.25	10.20	14.40
Feb.	110.00	28.00	11.625	20.875
March	110.00	25.00	10.00	15.25
April	110.00	24.25	9.50	13.50
May	110.00	23.50	9.40	12.40
June	110.00	21.30	7.50	10.50
July	109.00	21.50	7.50	10.50
Aug.	110.00	19.25	7.50	10.50
Sept.	110.00	18.50	7.50	12.00
Oct.	97.50	18.50	6.30	13.20
Nov.	82.50	18.50	5.50	12.50
Dec	77.50	18.50	5.50	12.50
Year's Low	75.00	18.00	5.00	10.00

Table B
Cottons 1948
Dealer Buying Prices

	No. 1 Whites Repacked	Thirds & Blues Repacked	No. 1 White Shirts
Yearly avg.	$4.48	$2.75	$10.903
Year's high	5.00	3.00	12.00
Year's low	4.00	2.50	10.25

Writing Papers

Eastern rag-content mills have begun to follow mid-Western lead by reducing prices gently, a gesture to the trend.

Whether such a *gesture* will satisfy consumer demand is receiving consideration in other directions. With the heavy costs of labor, machinery replacements and repairs, wood pulp and other raw materials, sulphite mills cannot justify price reductions, it is stated. If such cuts are forced by buyers resistance on a competitive market, the trend is seen as dangerous to the economy. Meanwhile dealers report heavy shelf inventories of all grades of sulphites, with publishers and other consumers holding stocks to a minimum. Prices of wood pulp are being watched with tremendous interest by writing paper manufacturers.

Newsprint

Price of Canadian newsprint climbed $10.00 a ton during the year 1948 to reach $100 delivered New York at the year's close. Advancing $6.00 on January 1, 1948 and another $4.00 in July, average price for the year is calculated at $97.67 by the Newsprint Asso., of Canada, peak for a 23-year period. (See Table I). Canadian producers cite increased woods costs, particularly labor and forestry, also the relatively slower advance of Canadian newsprint to the U. S. general commodity index. (See Table II). Price is firm and no change indicated except in spot market prices which are reported to have dropped to new lows where heavy publisher stocks had accumulated at one or more points. Spot market price for European newsprint is reported at $170.00 for the product of established manufacturers, other grades at $140.00. (Full review of newsprint is carried elsewhere in this issue.)

(Continued on page 143)

Imports

Week Ending Feb. 19

NEW YORK

Newsprint

Madden Reeve Angel & Co., Inc., Braheholm, Kotka, 388 rolls.

N. Y. Times, Lica Maersk, Port au Basques, 1065 rolls.

N. Y. Sun, Lica Maersk, Port au Basques, 1121 rolls.

N. Y. World Telegram, Lica Maersk, Port au Basques, 1642 rolls.

Montmorency Paper Co., Brigus, St. Johns, 3327 rolls.

Madden Reeve Angel & Co., Inc., Stegeholm, Kotka, 452 rolls.

Transfer Paper

M. J. Corbett & Co., Dalerdyk, Antwerp, 9 cs.

Tracing Paper

M. J. Corbett & Co., American Importer, Bremen, 65 crates.

Drawing Paper

H. Reeve Angel & Co., Inc., American Importer, London, 4 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Importer, London, 17 cs.

Photo Paper

Lep Transport Inc., American Importer, London, 109 cs. (base).

Paper Napkins

H. W. Robinson & Co., American Importer, London, 8 cs.

Paper Serviettes

(———), American Importer, London, 8 crates.

A.C.O. Leather Co., American Flyer, Havre, 54 bls.

Paper Towels

H. W. Robinson & Co., American Importer, London, 3 cs.

Wallpaper

Hudson Shipping Co., American Flyer, Havre, 6 pkgs.

Ground Wood Paper

Monodon Corp., Mormacpenn, Helsingfors, 683 rolls.

Monodon Corp., Braheholm, Kotka, 421 rolls (white.)

Rags, Baggings, etc.

E. J. Keller Co., Inc., Green Bay Victory, Shanghai, 39 bls. bagging, 89 bls. heavy bagging.

New England Waste Co., Green Bay Victory, Shanghai, 200 bls. picker waste, 350 bls. cotton waste.

Riverside Mills, Green Bay Victory, Shanghai, 1265 bls. cotton waste.

E. J. Keller Co., Inc., Express, Calcutta, 204 bls. old jute rags.

S. H. Waldestein Co., Express, Calcutta, 150 bls. cotton waste.

New England Waste Co., Express, Calcutta, 335 bls. cotton waste.

China Trade & Industrial Service, Ferncape, Shanghai, 269 bls. cotton waste.

New England Waste Co., Mormacmar, Buenos Aires, 65 bls. cotton waste.

L. J. Van Rafelghem, Mormacmar, Buenos Aires, 69 bls. rags.

Railway Supply & Manufacturing Co., Mormacmar, Rio de Janeiro, 94 bls. cotton waste.

Connecticut Burlap & Waste Co., Dalerdyk, Antwerp, 56 bls. old bagging.

National City Bank, Exford, Genoa, 181 bls. old bagging.

Bankers Trust Co., Crux, Antwerp, 51 bls. rags.

Irving Trust Co., Crux, Antwerp, 53 bls. rags.

R. L. Pritchard, Crux, Antwerp, 99 bls. rags.

Castle & Overton, Inc., Crux, Antwerp, 23 bls. rags.

Midwest Waste Materials Co., Bra Kar, Antwerp, 98 bls. waste cuttings.

A. de Vries Trading Corp., Bra Kar, Antwerp, 33 bls. jute waste.

W. J. Byrnes, Martha Kleppe, Bombay, 95 bls. cotton picker waste.

Brandwein Mazur Co., Martha Kleppe, Bombay, 400 bls. cotton waste.

E. J. Keller Co., Inc., Martha Kleppe, Bombay, 200 bls. old jute rags.

(———), Martha Kleppe, Bombay, 154 bls. jute rags.

Irving Trust Co., Martha Kleppe, Bombay, 170 bls. old jute rags.

C. Comiter, Martha Kleppe, Bombay, 200 bls. old jute rags.

S. H. Waldestein Co., Martha Kleppe, Bombay, 100 bls. cotton waste.

New England Waste Co., Laura Maersk, Shanghai, 150 bls. cotton waste.

New England Waste Co., Mormacfir, Cabedello, 1440 bls. cotton linters.

Riverside Mills, Mormacfir, Cabedello, 461 bls. cotton picker waste.

(———), Willamette Victory, Genoa, 127 bls. paperstock.

Old Rope

Smith & Bird, City of Chester, Calcutta, 65 bls. old hemp rope cuttings.

Gluestock

John Gorvers, Andrew Jackson, Manila, 45 bls.

H. Remis, Agwimonte, Vera Cruz, 1020 bdls.

U. S. IMPORTS FOR WOODPULP

Preliminary Figures, Dec. 1948

	Country of Origin	Short Tons
Mechanical		
Unbleached	Canada	25,287
	Sweden	1,548
	Finland	1,889
Screenings	Canada	466
Chemical		
Sulphite, Unbleached	Canada	30,582
	Sweden	9,052
	Finland	3,132
Screenings	Canada	589
Sulphite, Bleached—Rayon and Special Chemical Grades	Canada	16,426
Sulphite, Bleached—Other	Canada	26,393
	Sweden	4,130
	Norway	949
	Austria	200
	Finland	1,002
Sulphate, Unbleached	Canada	12,188
	Sweden	7,852
	Finland	1,272
Sulphate, Bleached	Canada	19,052
	Sweden	2,287
Soda Pulp	Canada	1,498
Totals, Dec. 1948:	Canada	132,481
	Sweden	24,869
	Norway	949
	Austria	200
	Finland	7,295
		167,794
Totals, Dec. 1947	Canada	148,307
	Newfoundland	1,814
	Mexico	253
	Sweden	37,687
	Finland	22,154
		209,215

Woodpulp Boards

Jay Madden Corp., Mormacpenn, Helsingfors, 59 rolls (solid white).

PHILADELPHIA

Pagel Horton & Co., Inc., Stegeholm, Husum, 3656 bls. dry bleached sulphite pulp.

Jay Madden Corp., Stegeholm, Kotka, 364 bls., 55 rolls solid white wood pulp boards.

Madden Reeve Angel & Co., Inc., Stegeholm, Kotka, 555 rolls newsprint.

Pulp Sales Corp., Stegeholm, Kotka, 130 bls. prime unbleached sulphite pulp, 1 ble. prime unbleached sulphate pulp.

F. Weber & Co., Exford, Genoa, 26 cs. drawing paper.

Chemical Bank Trust Co., Crux, Rotterdam, 117 bls. scrap bagging.

Transatlantic Animal By Products, Villar, Buenos Aires, 2975 bags gluestock.

Madden Reeve Angel & Co., Inc., Mormacpenn, Helsingfors, 295 rolls newsprint.

Jay Madden Corp., Mormacpenn, Helsingfors, 195 rolls wrapping paper.

Madden Reeve Angel & Co., Inc., Braheholm, Kotka, 368 rolls newsprint.

BALTIMORE

Pulp Sales Corp., Stegeholm, Kotka, 1800 bls. prime unbleached sulphate pulp, 650 bls. prime extra strong unbleached sulphite pulp.

Madden Reeve Angel & Co., Inc., Stegeholm, Kotka, 1013 rolls newsprint.

Jay Madden Corp., Stegeholm, Kotka, 129 rolls newsprint.

Pagel Horton & Co., Inc., Stegeholm, Kotka, 610 bls. dry bleached sulphate pulp.

Madden Reeve Angel & Co., Inc., Mormacpenn, Helsingfors, 266 rolls newsprint.

Madden Reeve Angel & Co., Inc., Braheholm, Kotka, 1166 rolls newsprint.

Jay Madden Corp., Braheholm, Kotka, 785 rolls ground wood & newspaper.

SAVANNAH

Atlanta Journal Co., Stegeholm, Geffe, 966 rolls newsprint.

Constitution Publishing Co., Stegeholm, Geffe, 789 rolls newsprint.

Ledger Enquirer Corp., Stegeholm, Geffe, 115 rolls newsprint.

Savannah Morning News, Stegeholm, Geffe, 546 rolls newsprint.

Evening Post Publishing Co., Stegeholm, Geffe, 121 rolls newsprint.

Dec. Newsprint Imports

WASHINGTON—Preliminary estimates of December newsprint imports by the Department of Commerce indicate a drop to 815,000,000 pounds from 834,000,000 in November.

Woodpulp imports rose to 167,000 tons from 145,000 in November, the Department reported. Exports of woodpulp increased to 7,946 short tons in December, from 4,423 short tons in November.

Exports of paper and paper manufacturers also rose, in value, to $10,500,000 from $6,400,000 in November.

Iran Forest Conservation

OTTAWA — Under a seven-year development plan, Iran intends to spend $650 million on a large-scale industrial and agricultural program, with the conservation of forests being included as an important part of the program, according to a report to Foreign Trade of the Department of Trade and Commerce here by J. M. Boyer, Canadian Government Trade Commissioner at Cairo.

Prices

Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

Delivered New York

STANDARD NEWS, per ton—

Rolls, contract	$100.00/ —
Sheets	115.00/ —

F.o.b. mill, varying freight allowances, Zone 1.

KRAFT—per cwt., 40# base wgt.

No. 1 Wrapping	7.75/ 8.00
Standard Wrapping Rolls	7.00/ —
Standard Wrapping Sheets	7.50/ —
Standard Bag	6.50/ —
Multiwall Bag, 40# and heavier, 24x36 (500 sheets)	
Southern	7.50/ 7.75
Northern	8.85/10.15

TISSUES—Per Ream 24x36 (480) 10/11 lbs.

Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	1.65/ —
Wh. No. 2	1.45/ 1.55
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Shred. Wh. No. 1 per lb.	.12¾/ .18

TOILET—Per Case of 100 rolls—1 M Sheets.

Unbleached 4½x4½	$7.20/ —
Unbleached 4½x5	5.85/ —
Bleached 4½x4½	8.00/ —
Bleached 4½x5	8.45/ 8.80
Per Case of 50 rolls—1500 sheets	
Unbleached 4½x4½	$5.70/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$6.95/ —
Bleached 4½x4½	7.70/ —

PAPER TOWELS—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.45
Br. Sr. M'tif'd 10x12	3.80
Br. Jr. M'tif'd 9½x9¾	3.30
Br. Jr. Sgl. fold 10x10¾	3.35

MANILA, per cwt.

No. 1 Jute Tag, sheets*	$15.05/ —
Reg. Jute M.F. Manila, sheets*	13.50/ 15.50
No. 1 Manila Wrapping	8.75/ 10.50
Printing Manila	10.00/ 11.00

* Less usual allowance for rolls.

BOARDS, per ton—

Filled News	$80.00/$82.50
Plain Chip	80.00/ —
Bldhd. Mla. L-d. Chip*	102.50/105.00
White Pat. coated*	120.00/
Kraft Liners 42 lb.	105.00/
Kraft Corr. .009	110.00/
Binders Boards	120.00/126.00

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

RAG CONTENT BONDS AND LEDGERS—

White, 16 lb.

BONDS, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$59.00	$54.55	$52.30
100% Rag	52.25	48.30	46.30
75% Rag	41.50	38.30	36.70
50% Rag	33.75	30.70	29.50
25% Rag	30.25	27.45	26.35

LEDGERS, per cwt.

100% Rag Ext. No. 1	$57.00	$52.65	$50.50
100% Rag	50.25	46.40	44.50
75% Rag	41.50	38.30	36.70
50% Rag	33.75	30.70	29.50
25% Rag	30.25	27.45	26.35

SULPHITE BONDS AND LEDGERS—

White, 16 lbs.

BONDS, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.35	16.85

LEDGERS, per cwt.—

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

WHITE BOOK, per cwt.—

	Case	Ton
Coated		
No. 1 Glossy	$20.90	$20.15
No. 2 Glossy	19.65	18.90
No. 3 Glossy	18.90	18.25
Machine Coated	16.65 to 17.15	16.05 to 16.35
Uncoated		
No. 1 Antique (Watermarked)	16.40	15.80
Offset	15.15 to 17.15	14.60 to 16.40
A Grade E. F.	15.40	14.85
A Grade S. C.	15.90	15.35
B Grade E. F.	15.15	14.55
B Grade S. C.	15.65	14.95

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—India	.35½/ .36½
Fine Polished India	.41½/ .45
Unpolished—Paper Makers	.32¼/ .34½
Tube Rope	.33¼/ .35½
Wrapping	.36 / .38¾
Cotton	.58 / .60
Polished Cotton	.55 / —
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.31 / .35
(American Hemp)	
Polished Hemp	.46½/ .48
Unpolished	.35 / .37¾

Rag Market

New Domestic Cotton Cuttings

(Prices to Dealers, F.o.b. Ship. Pt.)

White Shirt	$10.00/ $10.50
Unbleached Muslin	10.00/ 10.50
Light Silesias	7.00/ 7.50
White Back Blue Overalls	5.75/ 6.00
Blue Overalls	5.25/ 5.75
Fancy Shirt	4.50/ 5.00
Percales	5.50/ 6.00
Light Prints	5.50/ 6.00
No. 1 Washables	3.00/ 3.25
Bleachable Khaki	5.00/ 5.50
Unbleachable Khaki	4.50/ 5.00
Cottonades	4.25/ 4.75
Lt. Flannelettes	7.00/ 7.50
Men's Corduroy	3.50/ 4.00
Women's Corduroy	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
No. 1 Whites, Repacked	$4.50/ $5.00
No. 1 Whites, Miscellaneous	3.50/ 4.00
No. 2 Whites, Repacked	2.75/ 3.00

(Continued on page 82)

World Wood Pulp Markets at a Glance

First Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered, with varying freight allowances		On dock Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$80.00/ —	$80.00/ —			
Sideruns Pulping News		80.00/ 90.00			
Soda, Bleached	130.00/135.00	130.00/ —			
Sulphate, Bleached	136.00/145.00	147.50/150.00	$150.00/ —		
Sulphate, Unbl'd North'n	115.00/125.00	115.00/125.00	127.50/ —	127.50/ —	
Sulphate, Unbl'd South'n	105.00/115.00				
Sulphite, Blchd. (S'ftw'd)	126.00/135.00	135.00/ —	140.00/165.00	165.00/ —	140.00/165.00
Sulphite, Blchd. (H'dw'd)	125.00/145.00				
Sulphite, Unbleached	118.00/ —	125.00/ —	135.00/140.00	140.00/143.00	
Sulphite, Unbl'd (Glessine) (Varying frt. allowances)	120.00/ —	130.00/ —			
Sulphite, Unbl'd (Glassine) (No freight allowed)		118.00/ —			

Waste Paper Market

Base Prices to Mills for Average Packings

F.O.B. Shipping Point (Per Ton)

	New York Feb. 16	Philadelphia Feb. 16	Boston Jan. 29	Chicago Feb. 1
No. 1 Hd. Wht. Env. Cuts	$95.00/100.00	$90.00/ 95.00	$90.00/105.00	$90.00/100.00
No. 1 Hd. Wht. Shvs., unr'l'd	80.00/ 85.00	65.00/ 70.00	80.00/ —	80.00/ —
Super Soft Whit. Shvs.	80.00/ 85.00	70.00/ 75.00	80.00/110.00	75.00/ —
No. 1 Soft Wht. Shvs.	60.00/ 65.00	50.00/ 55.00	70.00/ 80.00	55.00/ —
No. 1 Fly Leaf Shvs.	40.00/ —	18.00/ 22.00	35.00/ 40.00	35.00/ —
No. 1 Gdwd. Fly Leaf Shvs.	20.00/ 30.00	14.00/ 16.00	25.00/ —	45.00/ —
No. 1 Heavy Books & Mag.	17.00/ 19.00	17.00/ 19.00	22.00/ 23.00	23.50/ —
Mixed Books	9.00/ 11.00	8.00/ 10.00	12.00/ —	9.00/ —
No. 1 Wht. Ledger	35.00/ 40.00	35.00/ 40.00	45.00/ 50.00	
Colored Ledger	30.00/ 35.00	30.00/ 35.00	37.50/ —	30.00/ 31.00
Manila Tab. Cards	55.00/ 60.00	45.00/ 50.00	65.00/ 75.00	65.00/ —
New Manila Env. Cuts	65.00/ 75.00	60.00/ 65.00	60.00/ 70.00	70.00/ —
Extra Manilas	20.00/ 25.00	20.00/ 25.00	30.00/ 35.00	30.00/ 35.00
Mxd. Kraft, Bag Cuts	45.00/ 55.00	45.00/ 50.00	70.00/ —	60.00/ —
Kraft Envelope Cuts	65.00/ 70.00	65.00/ 70.00	70.00/ 75.00	65.00/ —
Trpl. Std. No. 1 Brn. Sft. Kraft	35.00/ 40.00	30.00/ 35.00	40.00/ 45.00	40.00/ —
New Kraft Corr. Cuts	30.00/ 35.00	25.00/ 30.00	45.00/ —	55.00/ —
No. 1 Asstd. Old Kraft	30.00/ 35.00	25.00/ 30.00	25.00/ —	20.00/ —
Used Kraft Bags	30.00/ 35.00	14.00/ 18.00	30.00/ —	35.00/ —
New Jute Corr. Cuts	18.00/ —	18.00/ 20.00	16.00/ —	17.00/ 18.00
Old Corrugated	14.00/ 15.00	12.00/ 14.00	13.00/ 14.00	14.00/ —
No. 1 News	12.00/ 14.00	7.00/ 10.00	11.00/ 12.00	— / 15.00
No. 1 Mixed Paper	4.00/ 5.00	4.00/ 6.00	— / 7.00	7.00/ —
Box Board Cuts	6.00/ 7.00	4.00/ 5.00	10.00/ —	10.00/ —
White Blank News	60.00/ 65.00	55.00/ 60.00	— / 60.00	45.00/ —
Overissue News	12.00/ 14.00	12.00/ 14.00	11.00/ 12.00	18.00/ —
Sulphite Mill Wrappers	12.00/ 14.00	6.00/ 8.00	19.00/ —	12.00/ —

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97

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TISSUE FILLER produces brighter white papers from ground wood and unbleached sulphite.

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NOW

GREATER WET STRENGTH

ADDS STRENGTH TO SHORT FIBRES

Definite Results from a unique, Strong Flexible Film

INCREASES

MULLEN-FOLD-TENSILE

Prices

CONTINUED FROM PAGE 79

No. 2 Whites, Miscellaneous	2.00/	2.25
Blue Overalls	3.00/	3.25
Thirds and Blues, Repacked	2.00/	2.25
No. 1 Roofing Rags	1.40/	1.50
No. 2 Roofing Rags	1.25/	1.35
No. 3 Jute Bagging	1.15/	1.25
No. 4 Brussels & hrd. Bck'd crpts.	1.25/	1.35
No. 5A Roofing Rags	1.25/	1.35

New Foreign Cotton Cuttings

(Prices to Dealer, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	
New Mixed Cuttings	
Light Silesias	prices
Light Flannelettes	
New White Cuttings	are
New Unbleached Cuttings	
Fancy Shirt Cuttings	nominal
Light Prints	
Bleachable Khaki, No. 1	
Unbl. Khaki, No. 1	

Old Foreign Rags

(Prices to Dealer, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	prices
Extra Light Prints	
Old Light Prints	
Med. Light Prints	are
Dutch Blue Cottons	
Checks and Blues	
Linsey Garments	nominal
Dark Cottons, European	
Dark Cottons, Egyptian	
Old Shopperies	
New Shopperies	

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	$8.00/	$8.50
Domestic Gunny, No. 1	8.00/	8.50
Heavy Wool Tares	7.00/	7.50
No. 1 Scrap Bagging	5.75/	6.00
Roofing Bagging	.80/	.95
Foreign Manila Rope	5.50/	6.00
Domestic Manila Rope	5.75/	6.00
Jute Strings	6.00/	6.25
No. 1 Sisal Strings	5.00/	5.25
Mixed Strings	1.30/	1.50

PHILADELPHIA

Domestic Rags (new)

(F.o.b. Eastern Shipping Point)

White Shirt	.10½/	.11
Light Silesias	.07½/	.08
Black Silesias, soft	.05½/	.06
Unbleached Muslin	.10½/	.11¼
Washable Prints	.06½/	.07
Washable No. 1	.05 /	.05½
Blue Overall	.07½/	.08
Washable Shredding	.02¾/	.03¼
Fancy Percales	.06¾/	.07¼
Unbleachable Khaki	.05½/	.06¼
Bleachable Khaki	.06¼/	.06¾
Men's Corduroy	.05¾/	.06
Ladies' Corduroy	.05 /	.05½
Cottonades	.05¾/	.06

Domestic Rags (old)

(F.o.b. Eastern Shipping Point)

Mixed White	3.50	/	—
Thirds and Blues Repacked	2.00	/	—
No. 1 Roofing Stock	1.20	/	—
No. 2 Roofing Stock	1.10	/	—

Bagging

(F.o.b. Eastern Shipping Point)

Roofing Bagging	1.35	/ 1.40
Old Manila Rope	—	/ 5.50
Foreign Gunny No. 1	nominal	
Domestic Gunny No. 1	.07¼/	.07⅜
Sisal Strings No. 1	.04½/	.05
Sisal Strings No. 2	.03½/	.04
Sisal Jute	.02¼/	.03
No. 1 Scrap	.06½/	.07
No. 2 Scrap	.03 /	.03½

BOSTON

Bagging

(F.o.b. Boston)

	(Per 100 lbs.)	
Foreign Gunny	9.25	/ 9.50
Domestic Gunny	9.00	/ 9.50
Domestic No. 1 Old Rope	6.00	/ 6.50
Foreign No. 1 Old Rope	5.75	/ 6.00
Mixed Strings	1.35	/ —
Transmission Rope—Domestic	3.00	/ 3.50
Jute Carpet Threads	—	/ 4.00
Bleachery Burlap	—	/ 9.00
Scrap Burlap—		
Foreign	6.75	/ 7.00
Domestic	8.25	/ 8.50
South America	8.25	/ 8.50
Austr. Wool Pouches	8.50	/ —
New Zealand Wool Pouches	8.00	/ —
New Burlap Cuttings	8.50	/ —
Heavy Baling Bagging	8.00	/ 8.50
Paper Mill Bagging	—	/ 7.25
No. 1 Roofing Bagging	—	/ 1.40

Domestic Rags (New)

(F.o.b. Boston)

	(Per 100 lbs.)	
New Light Prints	nominal	
Fancy Percales	—	/ 6.50
White No. 1 Shirt	10.00	/10.75
Light Flannelettes	7.00	/ 7.50
Canton Flannels, Bleached	9.00	/ 9.25
Underwear Cutters, Bleached	10.00	/10.25
Underwear Cutters, Unbleached	10.00	/10.25
Blue Overalls	—	/ 6.00
Soft Unbleached	10.00	/10.75
Blue Cheviots	7.00	/ 7.25
Fancy Shirt	5.00	/ 5.25
Washable	5.00	/ 5.25
Khaki Cuttings	5.00	/ 5.25
Men's Corduroy	4.50	/ —
Khaki Canvas	—	/ 5.50
B. V. D. Cuttings	10.00	/10.25

Domestic Rags (Old)

(F.o.b. Boston)

	Per 100 lbs.	
No. 1 Whites, Repacked	$4.00	/ —
No. 1 Whites, Miscellaneous	3.00	/ 3.75
Twos and Blues, Repacked	2.25	/ 2.50
Old Blue Overalls	3.00	/ 3.25
No. 1 Roofing Stock	—	/ 1.45
No. 2 Roofing Stock	—	/ 1.35
No. 3 Roofing Stock	—	/ .80
No. 4 Roofing Stock	—	/ .80
No. 5, Quality A.	—	/ 1.20
Old Manila Rope	6.00	/ —

Markets

Blanc Fixe

Supply-demand in balance. Prices firm. Currently quoted at $85.00 in bags, car lots, at works, 6 cents per pound, l.c.l., deld. By-product supply somewhat restricted. Quoted at $77.50 per con, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Steady improvement in supply. Demand and prices steady. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l., works.

Casein

U. S. govt. buying unsteadies domestic market. Argentine price weakens further. Current prices on processed acid precipitated casein at 23½ to 28 cents per pound for domestic grades and 23 to 24 cents for imported grades, f.o.b. shipping point.

Caustic Soda

Generally in easy supply. New production will sustain improved condition. Demand lighter. Prices firm. Solid caustic is reported at $3.05 per cwt. flaked and ground is quoted at $3.45 per cwt., in 400 pound drums, $3.95 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.40 per cwt.; liquid 73 percent in tank cars at $2.50 per cwt., at works.

China Clay

Demand easier, supply of domestic and imported ample. Prices firm. Domestic filler quoted at $10 to $12.50 per ton, car lots, f.o.b. mines. Coating clay is $15 to $25. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Some easing of demand and improvement in production makes supply condition brighter. Tankers still reported short sectionally. Prices firm. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt. in multi-tank cars, f.o.b., works.

Rosin

Market weakened by uncertainty of next year's loan program, unseasonable weather and slow demand. Prices drop on gum and wood grades. Further softening probable. Gum rosin in drums per 100 pounds net in car lots, f.o.b., Savannah; B, $6.50; G, H, I, K, $6.68; Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $4.50; FF, $6.50.

Rosin Size

Supply good. Demand steady. Price eases with rosin market. Seventy percent gum and pale wood grades, tank cars, $5.60 to $5.70, f.o.b. southern shipping point.

Salt Cake

Easing of demand and steady production brings ample supply condition. Prices steady. Domestic quoted at $27.00, f.o.b. shipping point, freight allowed to destination.

Soda Ash

Supply ample. Demand reduced by glass industry cutbacks. Prices firm. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate

Supply ample. Demand good. Prices firm. Reported at $1.95 per cwt. paper bags, carload lots.

Starch, Corn

Demand fair. Supply good. Prices firm following last 25c dip. Pearl grade quoted at $4.67 per 100 pounds; powdered starch at $4.78 per 100 pounds; car lots, f.o.b. Chicago.

Starch, Potato

Demand described as brisk. Supply both Idaho and Maine good, prices steady. High grade quoted at $4.50 cwt. f.o.b. Idaho; $4.75/$5.00 f.o.b. Maine; Pearl grade, $4.50/$4.75 cwt. f.o.b. Maine.

Sulphate of Alumina

Supply good. Demand steady. Prices firm. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur

Demand sustained at good level. Supply good. Prices firm. Annual contracts are quoted at $18 per long ton, f.o.b. mines; $19.50, f.o.b. vessels, Gulf ports. Export price f.o.b. Gulf ports is $22.00 per long ton.

Talc

Prices steady. Demand continues ahead of supply. Improvement due this year. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

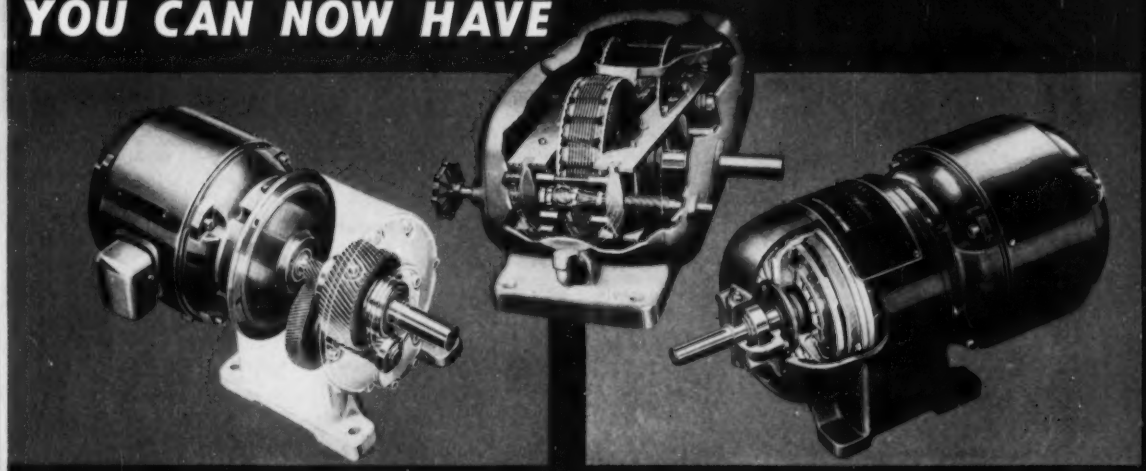
Tapioca Flour

Improvement seen in demand. Prices steady. Slow change in supply of high grades. Medium and low in adequate supply. Superior high range from $10.25/$11.50 cwt.; high grades $9.25 cwt., on dock Atlantic and Gulf ports; medium grades range from $6.00/$7.50 cwt. on dock, N. Y. Coarse pearl grades, $5.00/$5.50 cwt. on dock N. Y.

Titanium Dioxide

Paper grades still inadequate. Improvement in supply not immediately expected. Some lessening in demand reported. Prices firm. Anastase 19½c pound carload lots, 20c l.c.l., rutile, 21½c pound carload lots, 22½c l.c.l.; 50-pound bags, f.o.b. plant, actual freight allowed.

YOU CAN NOW HAVE



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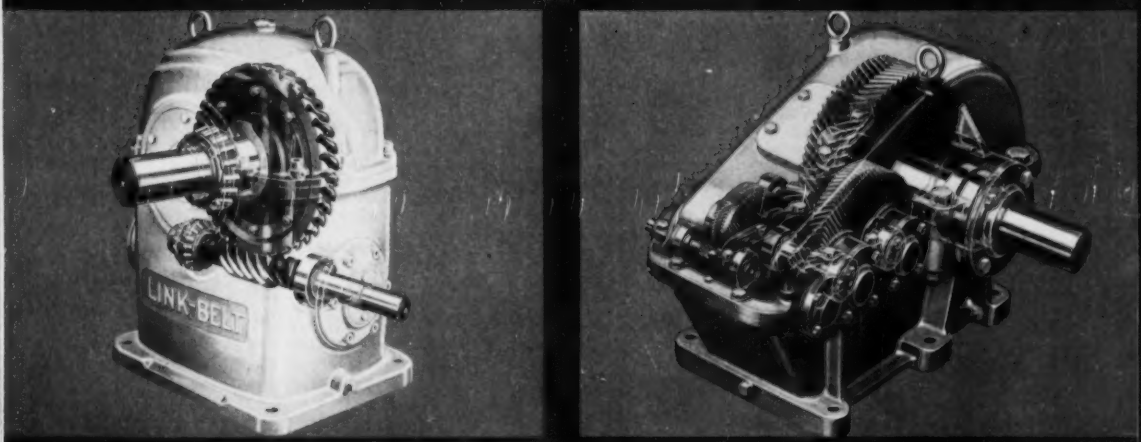

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LINK-BELT

Power Transmission Machinery

"THE COMPLETE LINE"

Financial Record

Preferred Stocks	Per Share Calendar Year 1947	Earnings 12 Mos. to Approx. 9/30/48	Indic. Annual Divid. Rate	Feb. 23 Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$38.64*	$43.53*i	$3.75	98½
Armstrong Cork Co. $4.00 Cum. Conv.	38.64*	43.53*i	4.00	109¾
Celotex Corp. 5% Cum.	24.25c	26.42k	1.00	17⅜
Champion Paper & Fibre $4.50 Cum.	65.90f	43.82j	4.50	96½
Container Corp. of Amer. 4% Cum.	102.74	98.49	4.00	96½
Crown Zellerbach $4.20 Cum.	56.40f	59.10k	4.20	96
Crown Zellerbach $4.00 Cum. Conv. 2nd	211.39f	178.01k	4.00	95½
Dixie Cup Co. $2.50 Cum. Conv. Cla	9.16	9.61	2.50	50
Flintkote Co. $4 Cum.	81.91	83.25m	4.00	99½
Robert Gair Co., Inc. 6% Cum.	18.01	15.97	1.20	16½
International Paper Co. $4 Cum.	236.51	242.27	4.00	96½
Johns-Manville $3.50 Cum.	128.81	209.89m	3.50	110½
Kimberly Clark Corp. 4½% Cum.	70.03	82.79	4.50	104½
Kimberly Clark Corp. 4% Cum. Conv. 2nd	95.88	114.55	4.00	97
MacAndrews & Forbes 6% Cum.	62.20	59.89	6.00	137½
Mead Corp. 4¼% Cum.	81.56	80.43	4.25	76
Mead Corp. 4% Cum. Conv. 2nd	53.34	51.89	2.00	31¼
Paraffine Cos. Inc. 4% Cum. Conv.	152.76a	156.11m	4.00	103¾
Rayonier Inc. $2 Cum.	13.58	16.09	2.00	33½
St. Regis Paper Co. 4.40% 1st A	76.93	85.00	4.40	83½
Scott Paper Co. $3.40 Cum.	43.95	54.31	3.40	93
U. S. Gypsum Co. 7% Cum.	211.34	314.45m	7.00	178½
United Wallpaper Inc. 4% Cum. Conv.	(d)1.35a	(d)0.79m	2.00	22½
West Virginia Pulp & Paper 4½% Cum.	75.75c	81.01g	4.50	106¼
Common Stocks				
APW Products Co.	$1.24	$1.32	$0.25	3⅞
American Writing Paper Corp.	1.61	0.02	0.25	5¼
Armstrong Cork Co.	6.41	7.17i	3.00	45
Celotex Corp.	6.59c	7.21k	2.00	21⅝
Certain-Teed Prods. Corp.	3.75	3.99	1.15	11½
Champion Paper & Fibre	5.57f	3.81j	2.00	22
Congoleum Nairn Co.	4.55	5.12i	2.25	28¼
Container Corp. of America	10.09	9.54	4.50	33½
Crown Zellerbach	6.81f	6.70k	2.00	23½
Dixie Cup Co.	5.87	6.26	1.00	25½
Eastern Corp.	5.02	6.51	1.00	12⅝
Flintkote Co.	6.27	5.86m	2.50	25⅛
Robert Gair Co., Inc.	2.83	2.49	0.70	6⅝
Great Northern Paper Co.	4.56	4.55	2.80	36½
International Paper Co.	15.02	15.39	5.00	45⅞
Johns-Manville Corp.	3.17	5.22m	2.00	37½
Kimberly-Clark Corp.	4.29	5.16	1.65	19⅝
MacAndrews & Forbes Co.	3.68	3.53	2.50	32½
Marathon Corp.	3.39c	4.11k	1.40	19½
Mead Corp.	7.33	7.11	2.00	15¼
National Container Corp.	4.13	2.86	0.80	7½
Paraffine Cos. Inc.	2.40a	2.45m	1.20	17¾
Rayonier, Inc.	7.30	8.88	2.00	27¼
Ruberoid Co.	10.88	12.90	3.25	49¼
St. Regis Paper Co.	2.66	2.86	0.80	8
Scott Paper Co.	3.02	3.79	2.50	47½
Sutherland Paper Co.	6.87	6.02m	2.50	33
Taggart Corp.	1.29	N.A.	0.60	11
Union Bag & Paper Corp.	7.93	9.17m	4.00	28½
United Board & Carton	4.95b	2.04h	(e)	5¼
U. S. Gypsum Co.	10.00	15.04m	6.00	100¼
United Wallpaper	(d)0.11a	(d)0.10m	(n)	3½
West Virginia Pulp & Paper	11.40c	11.51g	4.00	40½

(a) Year ended 6/30/48
(b) Year ended 5/30/48
(c) Year ended 10/31/47
(d) Deficit
(e) Omitted dividend 2/4/49
(f) Year ended 4/30/48
(g) 12 months to approximately 1/31/49
(h) 12 months to 11/13/48
(i) 12 months to approximately 6/30/48
(j) 5 months to 9/30/48
(k) 12 months to approximately 10/30/48
(m) 12 months to 12/31/48
(n) Last payment 25c, 9/16/47
(*) Pro forma
(N.A.) not available

Dividends Declared

Rayonier, Inc., has declared the regular quarterly dividend of 50 cents per share on its $2 cumulative preferred stock, payable April 1 to stockholders of record March 11.

Hinde & Dauch Paper Co. of Canada has declared a dividend of 25 cents per share, payable April 1, 1949, to shareholders of record February 28.

Gaylord Container Corp. has declared a dividend of 37½ cents a share on its common stock payable March 10 to shareholders of record March 1.

Minnesota & Ontario Paper Co. has declared a common stock dividend of 50 cents per share payable April 20 to shareholders of record on March 31.

Powell River Co., Ltd., has declared a dividend of 50 cents per share, plus 30 cents, payable March 15, ex-coupon March 12.

Acquires Gaspesia Co.

OTTAWA—As a result of a share-for-share exchange offer to minority shareholders of the Gaspesia Sulphite Co., the Anglo-Newfoundland Development Co., has obtained complete control of the Gaspesia firm. Before the exchange offer, made late last year, the Anglo-Newfoundland company held 225,000 of the 310,000 outstanding common shares of the Gaspesia firm and the rest were held in Canada as well as Britain.

The 84,500 new Anglo-Newfoundland $5-par shares issued under the exchange offer have been admitted to trading as from February 14 on the Montreal Curb Market so that 1,819,805 shares outstanding are left of an authorized capital of 3,000,000 $5-par shares.

It is understood that the company is now working on a $5 million program for modernizing its grinding room, speeding up equipment, etc., with the company, Anglo-Newfoundland Development Co., expected to have consolidated earnings of nearly $1 million above that of 1947 when the consolidated net profit totalled $5.2 millions or equal to $3.02 per common share.

Measure Tabled

OTTAWA—Of interest to preferred shareholders of the Quebec Pulp & Paper Corp., is the report that a measure has been tabled in the Legislature of the Province of Quebec under which the powers of the Quebec Government to deal with the bankrupt company are extended to December 1, 1951. Up to the present the province has not been able to dispose of the property on a satisfactory basis, it is understood.

Gottesman Director

NEW YORK—D. Samuel Gottesman has been elected to the board of directors of Rayonier, Inc Mr. Gottesman is president of Gottesman & Co., Inc., and president of the Central National Corp., and is a director of the Eastern Corp., which pioneered in the development of woodpulp for use in rayon.

G. E. in Salt Lake City

SALT LAKE CITY, Utah — Expanded repair, maintenance, and warehousing facilities for increasing service on General Electric apparatus in Utah, Idaho, Montana, and Nevada, will be established here by the G-E apparatus department, B. C. J. Wheatlake, manager of the company's local office, states.

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Casein in the World Market

By NILS ANDERSON, JR.

Vice-President—Chemical Division, The Borden Co., New York City

In recent years there has been a tendency toward stability in the casein market. There was very little fluctuation in price during 1948, especially from the beginning of the spring season to the end of the flush.

Many people ask, Why has this speculative commodity settled down?

The greatest settling influence has been the U.S. Government's supporting the price of skim milk by buying large quantities of skim milk powder. This powder is distributed in the form of relief and is given to foreign countries in need of food and also to countries occupied by our armies. Other dairy products have also been supported so that any weakness could hardly develop during 1948.

Also, the demand has been more or less equal to supply and buyers could gauge their purchases without creating any disturbance in the market.

Substitutes have been available and naturally have helped to temper the market. Lower prices for casein would tend to displace some of these substitutes and it will be interesting to see what happens when casein production returns to normal in the U.S.

A factor in maintaining stable prices, perhaps more important than most people realize, is the manner in which casein has been purchased during the last few years. Large buyers in the past bought a six months' supply at once and thus created a large spot demand. The price naturally went up. Argentine casein before World War II

NILS ANDERSON, JR.

was handled perhaps by two or more brokers and any rumor of a customer's buying a large quantity of casein was multiplied. The seller in Buenos Aires, at the slightest provocation, would push up the price. Today, importers in the U.S. have very close connections with the Argentine supplier and speculation is less probable than in former years. Also, large buyers have been scheduling their purchases and working with small inventories.

1948 Price

Domestic casein sold for around 32c to 33c per pound during the year, with Argentine casein ranging between 25c and 27c per pound. Towards the end of 1948 domestic prices dropped because of competition from Argentina and also because of substitutes coming in from other sources at lower prices. It would be apparent, according to users, that when the prices go above 25c, consumption decreases. A price below 25c would undoubtedly create a brisk consuming demand.

1949 Price

Prices in 1949 will be influenced by Governmental action, not only in the U.S. and Argentina, but possibly in other countries, who will be substantial buyers. At the time of this writing the U.S. Government has not indicated how much skim milk powder it will purchase. It is evident that the Government will purchase quantities at lower prices. Until the program is determined it is doubtful whether any large production will come in, because casein producers cannot start operating on a large scale and then have to close down because the Government supports skim milk powder and there is no skim milk with which to make casein.

It would be reasonable to expect lower prices in 1949 for the following reasons: (1) Possible and probable decrease in Government purchases of skim milk powder, and a resultant increase in casein production. (2) Other natural and synthetic substitutes readily available. (3) Inevitability of devalued currency in the Argentine. (4) A generally improved dairy situation in other countries which will make available more casein without importation.

Production

Production in the U.S. in 1948 is estimated at about 13,700,000 pounds, which is low compared to what could be called a normal 40,000,000-pound production. When casein assumes a normal position in the U.S., a price low enough to push out substitutes now being used will have to follow; and this should follow through because Argentine casein will be hard to move, which should drive down the price of this imported material.

Argentine production will be large, around 32,000 metric tons. The U.S. imported in 1948 about 15,000 to 16,000 tons and as this figure decreases, prices should decline.

France, a large producer in the past, shows signs of renewing production. Canada and New Zealand have been producing fair quantities.

CASEIN EXPORTS FROM THE ARGENTINE—BY COUNTRIES
1948

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
Australia	....	....	....	....	....	10	....	....	....	....	....	....	10
Belgium	53	131	45	50	45	21	80	25	8	94	52	64	668
Brazil	....	....	....	3	....	....	....	....	....	....	....	4	7
Celyon	....	....	2	....	....	....	....	....	....	....	....	....	2
Colombia	....	....	10	....	....	....	....	....	....	....	....	....	10
Cuba	....	....	....	1	....	....	....	....	....	....	....	....	1
Chila	8	10	....	....	....	....	9	6	23	....	....	87	193
China	4	....	10	8	12	....	....	....	6	....	....	....	40
Denmark	....	....	....	....	....	....	....	....	....	....	....	....	....
D. Guiana	....	....	....	....	....	....	....	....	....	....	....	....	....
Iraq	....	....	....	....	....	7	....	....	....	....	....	10	17
England	200	200	575	300	700	451	458	610	315	216	100	....	4,125
Finland	40	....	100	100	100	100	....	430	....	390	....	130	1,290
France	80	101	84	....	122	10	45	....	35	15	40	127	659
Greece	....	18	14	....	9	....	25	36	....	8	....	....	110
Germany	125	100	305	585	203	....	103	....	8	1	....	186	1,616
India	....	....	....	20	10	36	62	48	14	130	63	30	413
Ireland	....	....	....	5	....	....	....	....	....	....	....	....	5
Italy	....	....	....	....	....	2	3	....	....	....	60	45	110
Holland	....	90	30	....	....	125	109	....	....	100	50	125	629
Japan	50	....	....	50	....	....	....	....	....	....	....	100	200
Mexico	1	13	19	74	30	6	9	10	12	2	88	31	295
Honduras	....	....	1	....	....	....	....	....	....	....	....	....	1
Norway	15	15	....	50	50	....	....	....	....	55	....	10	195
M. Arch.	....	....	....	....	....	....	6	....	2	....	....	23	31
Palestine	....	3	....	2	....	5	7	....	6	14	15	....	52
Peru	....	....	....	....	....	....	....	....	....	....	....	....	....
Portugal	....	10	....	....	....	....	....	....	....	....	....	....	10
S. Africa	....	15	....	....	2	....	17	6	....	51	....	63	154
Spain	....	....	....	....	250	450	448	....	....	....	....	20	1,168
Sweden	....	5	426	116	32	....	15	....	....	320	....	692	1,606
Switzerl'd	145	60	40	....	33	5	13	10	20	....	....	100	426
Turkey	....	....	45	....	....	....	....	....	....	....	....	5	50
U. S. A.	1,655	2,202	379	1,439	1,351	2,068	1,166	947	1,009	997	793	1,593	15,599
Venezuela	....	25	37	5	12	....	13	....	....	12	....	27	131
	2,376	2,998	2,122	2,808	2,961	3,196	2,588	2,128	1,508	2,405	1,261	3,472	29,823

Argentine Production

Metric Tons—2204#

	1944	1945	1946	1947	1948
Jan.	3,250	2,731	3,000	2,927	3,556
Feb.	2,832	2,690	2,500	2,630	3,597
Mar.	2,743	3,308	3,500	2,814	3,518
Apr.	2,345	2,748	2,773	2,491	2,751
May	1,915	2,296	2,676	2,400	2,494
June	1,705	1,673	2,650	2,400	1,686
July	1,562	1,341	1,974	2,038	1,402
Aug.	1,677	1,565	2,047	1,923	*
Sept.	1,762	2,361	2,434	2,178	*
Oct.	2,306	2,631	3,112	3,466	*
Nov.	3,193	3,031	3,419	3,535	*
Dec.	3,050	2,834	3,461	3,800	*
Totals	28,340	29,209	32,546	32,602	

Total Argentine Exports

Metric Tons—2204#

	1944	1945	1946	1947	1948
Jan.	4,650	1,791	1,305	3,338	2,376
Feb.	3,727	1,428	3,949	2,089	2,998
Mar.	2,472	4,078	3,471	2,374	2,122
Apr.	1,149	3,159	1,828	1,903	2,808
May	1,349	2,933	4,408	882	2,961
June	4,370	4,124	2,304	2,524	3,196
July	4,044	1,880	3,538	1,286	2,588
Aug.	3,469	3,950	2,762	4,432	2,128
Sept.	2,227	2,342	2,817	2,538	1,508
Oct.	3,280	1,917	1,974	1,884	2,405
Nov.	1,330	1,852	1,338	2,532	1,261
Dec.	3,458	4,292	2,586	2,978	3,472
Totals	35,525	33,746	32,280	28,760	29,823

Argentine Imports to U. S.

Metric Tons—2204#

	1944	1945	1946	1947	1948
Jan.	3,250	432	895	1,840	1,655
Feb.	803	1,054	2,205	75	2,202
Mar.	1,637	3,693	1,255	.....	379
Apr.	1,133	2,640	625	60	1,439
May	202	1,804	3,296	.....	1,351
June	3,013	3,168	1,474	.....	2,068
July	2,750	1,202	2,836	500	1,166
Aug.	1,673	2,899	1,143	1,470	947
Sept.	2,020	1,245	1,169	951	1,009
Oct.	2,673	1,409	1,224	873	997
Nov.	.....	650	960	1,060	793
Dec.	3,341	2,333	1,847	2,426	1,593
Totals	22,495	22,529	18,929	9,255	15,599

* The Argentine Government has ceased supplying these figures.—L. H. Wilson—1/13/49. Not published since July, 1948.

Dry Casein Production U. S.

Short Tons—2000#

	1944	1945	1946	1947	1948
Jan.	438	333	177	1,271	375
Feb.	474	355	237	1,144½	405
Mar.	596	507	380	1,280	490
Apr.	805	781	670	1,451	712½
May	1,185	1,209	1,282	1,902	1,085
June	1,463	1,375	1,210	2,245½	1,012½
July	843	870	1,155	1,820	600
Aug.	480	405	775	1,537½	426½
Sept.	374	320	513	1,265	412½
Oct.	322	247	460	875	550
Nov.	203	130	650	432½	362½
Dec.	258	145	1,075	442½	307½
Totals	7,441	6,677	9,087	15,666½	6,739

Worldwide Consumption

It would be my opinion that consumption of casein has decreased and will continue to decrease until lower prices in relation to substitutes prevail. Prior to World War II, consumption in the U.S. was close to 80,000,000 pounds. It is now close to 50,000,000 pounds. Soya bean proteins, thermoplastic resin emulsions, urea resins, and machine coating of paper with starch have effected substitution. Paper coating manufacturers use the most casein and may continue the use of casein on a large scale, depending on price. Water paint manufacturers continue using substantial quantities. Urea resins for bonding wood are playing a more prominent part at the expense of casein in the adhesive field.

This same situation applies in most countries throughout the world where chemicals are now available and will tend to cut down the use of casein. You can see from the accompanying tables that England took less Argentine casein in 1948 than the 1947 figure of 7,493. On the other hand, Germany has taken a good deal more than the 90 tons imported in 1947. Japan is now increasing its consumption, and as reported last year, in pre-war years Japan and Germany imported over 25 percent of the total exported from the Argentine.

Conclusion

On the whole, casein is expected to arrive at a more normal pre-war position in 1949. If prices decline, it will be healthy for consumption and it will find wider use and supplant the substitutes now being used.

It should be apparent that the situation is not settled and that buyers should refrain from carrying any large stocks until further clarification.

The Casein Outlook for 1949

By J. M. WALSH

Manager—Paper Chemicals Dep't., American Cyanamid Co., New York City

The casein supply and prices during the year 1948 remained quite stable. The supply was ample, principally the Argentine grades, and prices ranged on the Argentine from 24 to 28 cents per pound. Production of domestic casein was on a reduced scale and we would estimate about 14,000,000 pounds during the year. U. S. production dropped about 50 percent from the previous year.

Imports increased principally from the Argentine to make up the sizable drop in domestic production, so that supplies were available at all times.

American production dropped largely due to the heavy government demand for milk powder. Government purchases were made mostly for export to Europe, for the Army and Navy, and use in occupied countries. The return for milk powder was about 50 percent greater than for casein, so casein was produced in fair quantity only during the flush spring season.

As this article is written (approximately February 1) the prospects are for a much greater domestic production and also for normal supplies from the Argentine during 1949. It is quite likely that a higher production of domestic will level off prices somewhat, which may in turn bring down the market price for the Argentine product. It is a little early to make any definite predictions, due to the fact that the price of milk and of a number of milk products are controlled by the U.S. Government. It is expected that control prices will be sufficiently high to absorb a good deal of the surplus skimmed milk, however, permitting a worthwhile increase in the production of casein. Casein this year may drop to a range two to three cents per pound lower than previously.

It is believed in some quarters that the tendency toward higher grade papers may increase the use of casein in the paper industry.

New Pollution Tack

NEW YORK — The Wisconsin Pulp Mfr's Research League is the subject of a feature story titled "New Tack on Stream Pollution" in the February 5 issue of *Business Week* magazine.

NAM Director

PLYMOUTH, Mass.—Ellis W. Brewster, president-treasurer of Plymouth Cordage Co., has been elected a director of the National Ass'n., of Mfr's.

Baldwin's 28th Year

NEW YORK—The Baldwin Paper Co., of which Samuel Himmell is president, is this month observing the 28th anniversary of its founding.

The Tapioca, Corn and Potato Starch Situation In Review

By WILLIAM W. STRASSER, JR.

Vice-President—Stein, Hall & Co., Inc., New York City

Tapioca Flour

Before World War II, United States imports of tapioca flour originated in Java. The war cut these supplies off abruptly and lent momentum to a drive that had already gotten underway to increase the production of Brazilian tapioca flour. At first, Brazilian qualities were poor, but steady improvement has been attained and the quality today of better-grade Brazilian flour is fairly good. On the other hand, generally speaking, Brazilian flour is not of as high quality as the fine Java estate flour such as "Royal" which was imported in large quantities before the war.

Brazilian production of tapioca flour is still small compared with what Java used to produce. Imports from Brazil during 1948 are estimated to be about 22,000 tons and during 1947 they were about 26,000 tons. Total tapioca imports from Java often exceeded 100,000 tons in a year.

Production of tapioca flour in Brazil during 1948 was adversely affected by unusually heavy rains at the time the crop was maturing. This caused considerable root damage and cut down the production of flour.

Prices of Brazilian tapioca flour remained firm throughout the year at about the same levels that were obtained during 1947. Best grades of flour sold at New York for between 10c and 10½c per pound. Other high grade Brazilian flours sold for prices between 9c and 9½c per pound.

Despite the fact that our domestic commodity markets here have gone down, Brazilian tapioca prices have been maintained. This apparent paradox can be explained by the fact that tapioca flour today is not sold in direct competition with domestic starches. At the foregoing price levels tapioca can only be used profitably by dextrine manufacturers, food users and for a few purposes by paper companies, veneer, and textile mills.

The outlook for a re-entry of Java tapioca flour into this country is still confused by the turbulent political situation in Indonesia. Furthermore, large quantities of tapioca must be used by the local population for food purposes to supplement the limited supply of rice. A large tapioca planting in Java is now under way, but prices are high and unless the food situation improves only relatively small quantities will be exported to this country during the forthcoming season.

WILLIAM W. STRASSER, JR.

A record crop of corn is being harvested this year. Supplies will exceed three and one-half billion bushels and consequently our country's supply of yellow grain is tremendous. As a concomitant of the large crop, corn prices have steadily come down. At this writing, price for cash corn is roughly 35c per bushel under the loan price. This is because of the amount of corn still on the farms, limited storage facilities and because there is high moisture corn available which will not be accepted by the Government under the loan.

Corn Starch

Pearl corn starch is today selling at slightly under 5c per pound F.O.B. Chicago and since productive capacity exceeds demand it is likely that prices will not go up from this level for some time and that conceivably the price of corn starch may go down somewhat. On the other hand, we feel that the major decline in prices has already taken place and that any further reductions should be moderate.

The corn wet-millers today have an ample supply of raw materials. On the other hand, they must consider not only corn starch or corn dextrines, but also all of the by-products, including corn gluten for feed, corn syrup and sugars and corn oil. Since other grains are also in large supply, the feed market is becoming increasingly competitive and prices are low. There is a fair demand for sugar derivatives of corn but ample cane and other sugars are also available. Corn oil must compete with a plentiful supply of other vegetable oils.

It is still too early to predict the outlook for this year's corn crop. The most that can be said is that plantings will be large, and if weather conditions are favorable, our harvest should again be a bumper one. If this is the case, we will continue to face a situation in 1949 characterized by an excess of supply of corn over demand, with a consequent brake on corn starch prices.

Potato Starch

In January, 1948, potato starch was still selling for between 10c and 11c per pound. During the season, because of the large potato crop, the prices have declined steadily until today prices are as low as 4½c per pound F.O.B. mill.

Production of potato starch this year has been quite large, due to plentiful supplies of potatoes in both Maine and Idaho. The demand for Idaho starch has been relatively larger than for Maine because Idaho prices, particularly in western areas, have been most closely competitive with corn starch. The Maine producers, on the other hand, have anticipated that there would be a large export business and also that the Government would make them loans or purchase their starch, which action would establish a price floor. Consequently, during recent months, while Maine mills were holding out for high prices, considerable business was diverted to Idaho.

We find little basis for the expectation of expert orders on domestic potato starch as Holland and Poland have had large potato harvests. Our best advices from abroad lead us to believe that most of the European demand for starch will be filled by purchases from Holland and not from the United States.

There has been considerable pressure on the Government to encourage a larger consumption of potatoes for starch, mainly because starch, unlike potatoes, does not deteriorate rapidly in storage. It therefore, seems quite possible that some purchase or loan program may be worked out to cover future production of starch. However, large supplies of potato starch are available now in Maine and limited supplies in Idaho. There should be adequate stocks in Maine to last users throughout the summer, and if no price support develops, prices may well be lower.

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Potato Starch Production in the United States

By H. R. BARNETT

President—American Key Products, Inc., New York City

Granted that most buyers, and their associates in the technical and production divisions of the paper mills, are willing to approach the subject in a judicial spirit, potato starch presents itself, because of certain recent changes, as an interesting item for the market basket.

Potato starch is not entirely unknown to paper mills, but until recently its use has been limited for at least three very sound reasons: (1) lack of continuity of suply, (2) price instability and (3) quality variations. Several things have happened to change the situation and they open up interesting possibilities.

Potato Starch Sources

Before World War II, we had two sources of supply: domestic production from Maine and imports, chiefly from Holland. The following is summarized from U. S. Tariff Commission Report No. 138 on Starch:

1930-39, Incl.	Total Lbs. Potato Starch
Maine production	178,800,000
Imports	122,200,000
Total from all sources	301,000,000
Annual Average (10 years)	30,100,000

Exports being neglible, we may assume that during the '30's U.S.A., consumption of potato starch averaged about 15,000 tons annually, not a very large amount. About half of it went to the cotton textile mills, the remainder to dextrines, adhesives, food and miscellaneous purposes. Dutch production at that time varied between 150,000 to 200,000 tons, mostly for export to other countries. This then was the picture ten years ago.

In 1937 our Government began its program of potato price support, which has led to vastly expanded production, not only in Maine, but in every other state in the union, while per capita consumption has declined steadily, a trend that has continued in an unbroken curve through wars, booms and depressions for more than 50 years.

Maine Starch Plants

The Maine starch plants were an early demonstration of the principles of modern chemurgy. Designed to provide an outlet for the ten to 15 percent of the crop graded out as culls, in years of large crops and low prices some table potatoes were also processed for starch. With a capacity in 1938 of about 40,000,000 pounds in a full season, Maine rarely produced this volume and sizeable starch imports were necessary to meet the requirements of our markets.

H. R. BARNETT

Then came the support programs, ever-increasing potato yields per acre, better seed, insecticides, fertilizers, and increased farm mechanization. Diversion of surplus edible potatoes became necessary. Other industrial outlets for potatoes proved ephemeral, and surpulses may not, by law, be sold for *food* in this country.

Assured of raw materials and stimulated by wartime demands for starch, a number of Maine plants were enlarged and modernized. Some, which had been destroyed by fire, were replaced. These Maine plants (20 in number) can now produce over 50,000,000 pounds, and indeed have approximated that figure several times in the past few seasons. At present, some of its capacity is idle, producers' starch inventories being substantial, and the CCC is desperately struggling to find outlets for huge surpluses of potatoes.

Should support programs be withdrawn or curtailed in the future, it is probable that starch production in Maine will contract greatly, but still exceed average pre-war production. Aroostook County, where the industry is localized, is, because of its climate and soil, pretty much a one-crop area, and its potato harvest would continue to feel the influence of modern agricultural improvements. However, it is difficult to believe that the price support policy of recent years will be completely reversed, or that potato crops will fall to the levels considered normal in the late '30's.

Even more significant than the developments in Maine, is the wholly new starch industry which has sprung up in Idaho, the second largest potato producing state. In 1941 the first plant began with an output of ten tons a day. It was subsequently enlarged to produce 25 tons a day. Two more plants quickly followed and in 1947 and 1948 three more were built, the largest capable of making over 50 tons of starch daily and incorporating many new features designed to maintain high quality and minimize production costs.

Idaho Starch Plants

The six Idaho plants at full capacity, in a normal 200-day season, could produce at least 32,000 tons which, combined with Maine, gives a total domestic capacity of between 55,000 and 60,000 tons.

The Idaho plants are not greatly dependent on Government surplus potatoes. Between 15 and 20 percent of the Idaho crop is culls which, before 1941 were a burden to the grower. Idaho grading laws are strict. Nor is it sound economics to burden low-grade potatoes with long freight hauls (Idaho markets are all very distant), disproportionate to the value of the goods.

Before 1941, Idaho farmers dumped their culls in the desert, at the edge of the irrigated areas. It costs no more to haul them to the starch plants where they yield a good cash income. Approximately 70 percent of Idaho's starch capacity can be operated on culls, and there are usually some quantities of table grades, which for one reason or another cannot be marketed, which are hauled to the starch plants.

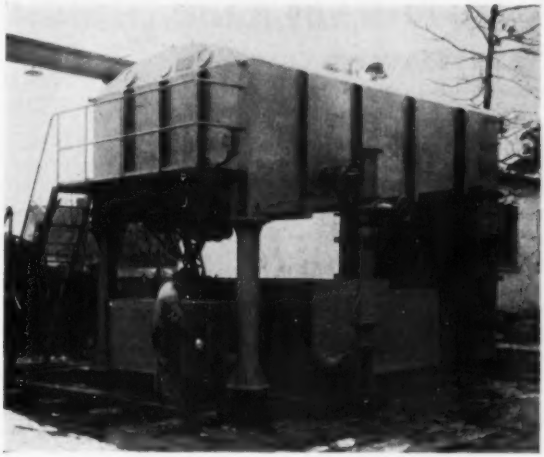
Occasionally the CCC has supplied the Idaho plants with surplus potatoes, particularly in the summer months when they would otherwise close. These surplus potatoes were from adjacent states and sold to the starch processors at or near the price of culls. Infrequently, locally grown edible potatoes have been furnished under diversion programs.

As in Maine, the Idaho plants are at present either shut down or operating part-time to avoid accumulation of excessive starch inventories.

Various official groups are beating the bushes for substantial export outlets for potato starch, but Holland is now producing more potato starch than in the best of pre-war years, and has re-established her position in almost every market except the U.S.A. Dutch production is reported at 250,000 metric tons for 1948.

Plans now being discussed in Washington contemplate Government financing of further production in Maine to keep the factories running, as the best means of using the burdensome crop

(Continued on page 101)



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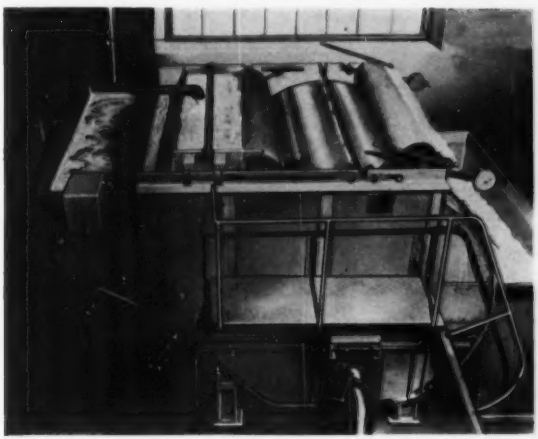

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SOLE SALES AGENTS FOR U.S.A. AND CANADA

A Review of the 1948 Market Pulp Situation

By REX VINCENT

Technical Consultant—Bulkley, Dunton Pulp Co., Inc., New York City

The year 1948 could easily turn out to be, as history looks back on it, one of the golden years of this country's business and industrial economy. Nineteen twenty-nine was such a year, and for a long time afterwards comparisons of amounts produced, units produced, dollars, etc., were made with the year 1929.

In 1948 American industry made more of nearly everything than in any previous year, and in addition to that, gave birth to a new industry. Television is the lusty infant which may well become the sixth or seventh industry in dollars of sales before too many years go by. There was a day when the rayon industry was a lusty infant and there was also a day when the kraft pulp industry in the South was in the same category.

The growth of this kraft industry has been the largest single contributing factor in keeping the production of wood pulp (all grades) in the U.S. increasing at a very high rate for the last 20 years. From 1930 to 1940 the average annual increase in production was 430,000 tons. This is a reflection of a production of 4,630,000 tons in 1930 and 8,960,000 in 1940. Most of this increase came between 1936 and 1940 where the increase over those four years amounted to 3,300,000 tons and most of this was due to the kraft pulp industry in the South.

Production of wood pulp (all grades) in 1948 was very close to 12,900,000 tons, which gives an average annual increase from 1940 to 1948 of 500,000 tons. Thus, over the 18-year period from 1930 to 1948 the average annual increase in production was 461,000 tons. If this average annual increment is maintained, it means that by 1955 the U.S. wood pulp industry will be producing 3¼ million more tons annually than in 1948.

It is evident from other statistics that this great expansion in pulp production has taken place in the integrated segment of the industry. The production of all grades of market pulp in the U.S. increased only 500,000 tons in the ten-year period—1937 to 1947—and production in 1948 will not exceed 1947 by much more than 50,000 tons. There has been no appreciable increase in imported pulp, since there was no more imported in 1946 than in 1929—namely, about 1,800,000 tons. About 2,300,000 tons came in during 1947, but it was down to 2,176,000 in 1948. Thus, to a certain degree, the converting or non-integrated mills of this country face a rather constant supply of pulp. With a relatively constant supply of pulp, the converting mills are forced to pay higher and higher prices as their demand increases. When it becomes possible for that group, through the sales of their paper, to expand their facilities and improve their properties, they are pinched by the constantly rising prices and scarcity of their raw material. This has happened twice within recent history. Once in 1936-1937 and the second time during the aftermath of World War II. If this condition is allowed to continue, the expansion that is indicated for the next ten years will take place within the integrated industry just as it did in the past ten years.

The year 1948 was remarkable in the wood pulp industry from another point of view, and that is that the market turned from a "seller's" market toward a "buyer's" market during the 12-month period. A trend that had been in existence for nearly eight years finally changed direction. But it was not so much an increasing supply of pulp that changed the course as it was a decreasing demand. Both these forces were operating and they began to be felt early in the year when the high premium prices began to disappear and approach contract levels. Inventories of all grades kept climbing, with the peak being reached, on sulphites, in August, at levels of 196,000 tons on unbleached sulphite and 140,000 tons on bleached sulphite.

Efforts made to check these rising inventories during the summer were not effective, due to the gradually decreasing demand. After August, however, the inventories started to slide and were still decreasing at the year's end. The inventory position of the sulphates did not change very much during the year as these buyers were apparently able to tailor their purchases to fit consumption sooner.

Where did the increasing supply of market pulp come from? Although some of it came from new mills that were built during 1946, 1947 and 1948, quite a large portion came as the result of little bits here and there all over the North American continent. Only one strictly market pulp mill has been built in Canada since the war's end, but others with surplus pulp production have been completed and expansion of production from existing facilities has been made all over Canada. During the ten-year period from 1930 to 1940, Canada shipped to the U.S. an annual average of 583,250 tons of all grades of pulp. Over the years 1940 to 1947 this annual average rose to 1,170,950 tons of all grades. In 1948 Canada shipped to the U.S. 1,593,543 tons of all grades. No attempt has been made here to separate market pulp from total pulp, but notice that the amount shipped to the U.S. in 1948 is almost three times the annual average from 1930 to 1940. It should also be mentioned that these figures include dissolving grades of pulp. This tremendous increase from Canada has added to the supply, of course, but it has also decreased the amount imported from overseas by roughly the same amount it has increased. It also gives some idea of the facilities in Canada that were idle in years past. As Canada expanded, Scandinavia's exports decreased as far as the U.S. market was concerned. Now we hear that the expansion in Canada has reached a point where its end can be foreseen as long as natural resource conservation laws, such as exist in Quebec, remain effective. No expansion is foreseen at all in Scandinavian production.

Most observers have already expressed the opinion that the production of paper and pulp in the U.S. in 1949 will be below the figures for 1948. It naturally follows that if these conditions exist, the imports of pulp will be lower also. Thus, 1948 might not only be a peak year for the production of pulp and paper, but it might also be a peak year for the amount of market pulp offered for sale. It is quite probable that there was more pulp offered for sale in the U.S. in 1948 than in any previous year, as all statistics, plus the experience of the year itself, point in that direction. It may well be 1951 or 1952 before any such amounts are again offered to this market.

Canadian Carloadings

OTTAWA—Car loadings on Canadian railways of woodpulp and paper advanced to 4,663 cars in the week ended February 5 compared with 4,392 cars in the preceding week and 4,351 cars in the similar week of last year, according to the latest nationwide survey of such revenue freight. The cumulative total of woodpulp and paper car loadings on the Canadian railways increased to 22,291 cars from the beginning of this year until the week ended February 5 compared with 21,856 cars in the similar period of last year, with the Eastern Division accounting for 19,482 cars this year as against 18,691 cars a year ago and the Western Division for 2,809 cars compared with 2,915 cars last year.

Evans Men in U. S.

NEW YORK—Paper & Industrial Appliances, exclusive licensee for the sale of Evans Rotabelt Suction Unit in the U.S. and Canada, reports the arrival here of W. L. Speir and Austin Barrett, Evans technical engineers, who will collaborate with the firm in the installation of Rotabelt suction units.

Review and Outlook for Unbleached Kraft Paper

By DERNELL EVERY

Secretary—Kraft Paper Association, Inc., New York

It is fairly general knowledge by now that the pulp and paper industry in 1948 exceeded al of its past production records. The same held ture for the kraft paper manufacturing industry. Annual production of unbleached kraft paper during 1948 amounted to about 2,200,000 tons. This was approximately 10 percent higher than the production in 1947, the previous high record year.

With United States production of all kinds of industrial goods—perishable and non-durable consumers' goods, capital goods and construction materials—at record levels throughout the year, it did not prove difficult for the kraft paper industry to live up to the record forecasts made for it just a year ago.

Kraft paper is not a single purpose product. The kraft paper manufacturer produces many distinct products, several of them in substantial volume, each with its own separate group of consumers and converters. We are referring to such products as wrapping paper, bag paper, shipping sack paper, envelope paper, asphalting paper, etc. The ultimate consumers of these products represent a cross section of practically every industry in the country and go on to include the housewife and the farmer. Not only has the recent expansion in Gross National Product given stimulus to the demand for kraft paper, but in addition there has been the factor of growth in population which has contributed 15,000,000 new consumers since 1940. It was only natural that these favorable factors should result in a greater demand for kraft paper than ever before. They provided a substantial backlog of orders throughout most of 1948, giving full leeway to the industry's capacity to produce.

Not only did the kraft paper industry have the incentive during 1948 to produce up to its full capacity, but with the rest of the pulp and paper industry it suffered from few obstacles to heavy production. Among these obstacles might be mentioned the reduced pulpwood receipts in the South in the spring which had resulted from extended rains in that region, and the losses of pulpwood in the Pacific Northwest in June when the worst floods in that region's history swept away some of the wood piles of the kraft paper manufacturers in that region. These losses were entirely made up in the South and largely made up on the Pacific coast before the end of the year. Coal and other fuels were plentiful throughout the year. Adverse shipping conditions which had faced the industry in previous years, such as occasional freight embargoes, shipping strikes, etc., did not arise to trouble the industry. Labor scarcities of former years also

DERNELL EVERY

seemed to have disappeared and, in fact, the quality of available labor improved. All of these factors gave momentum to the industry's activity and contributed to making 1948 an unusual and auspicious year that may well be long remembered.

We have now entered a new year. There is already a great deal of disagreement among the professional forecasters as to its outlook. The majority, however, seem to anticipate a lower average rate of operation in most lines of business during 1949 with a resulting decline in national income and sympathetic decline in commodity prices. Since we are dealing here with kraft paper, which is a "service" commodity that is needed and used in every industry and household, we must expect any decline in general business to have a direct effect on kraft paper.

Despite the definite correlation between national business activity and the demand for kraft paper, we are not pessimistic about 1949. Even if retail trade has to resort to sales and bargain days to attract its customers, wrapping paper has to be used to wrap the bargains. The use of grocers bags is related more to population than to national income and population will continue to grow in 1949. A high level of construction will be maintained during 1949 with its consequent demand for cement and other rock products. These require shipping sacks. So does the fertilizer which the farmer is using in greater quantities than ever before. His crops are ultimately delivered to the consumer in feed, flour and sugar sacks. Although the paper shipping sack industry has witnessed the return of a seasonal demand for its product, there is no evidence that the total tonnage of shipping sack paper that will be cut up in 1949 will shrink materially from its record tonnage consumed in 1948. The envelope manufacturers want more kraft paper than was available to them last year. Thus, as we check off the probable demand in each of the grades of unbleached kraft paper that is being manufactured, we cannot share the pessimism that is prevalent in business as a whole.

This demand varies between grades depending, of course, upon the particular industry or consumer group which that kind of kraft paper serves. Most kraft paper manufacturers have learned to diversify their production so that the seasonal pattern of any single industry cannot distort their own production. The very limtied seasonal pattern in the production of kraft paper itself is evidence of this diversification.

The Kraft Paper Association employs Dr. Charles F. Roos and his Econometric Institute to advise it regularly on general economic conditions and the industry's position with respect to these condition. Dr. Roos has been engaged in making forecasts for the demand for kraft paper for the past four years. On the basis of probable 1949 National Gross Product and the normal average growth of the kraft paper industry, it is Dr. Roos' belief that the demand for kraft paper this year could amount to as much as 2,400,000 tons. The translation of such demand into orders placed with the mills and production will be tempered by today's deflationary psychology. Consumers and converters will prefer to meet as much of their current requirements as possible out of their inventories with the result that mill production will not fully reflect actual consumption. This condition, Dr. Roos believes, will cause a return of seasonal demands in the industry: periods in which capacity it not adequate to meet orders and others in which surplus production develops.

Practically every part of the economy has taken a breather during the early weeks of the new year. As already mentioned, many consumers of kraft paper have rested on their inventories. This has permitted the kraft paper manufacturers for the first time in years to give atention to developing new customers and products. Specialties are reappearing. Colored and fancy wrapping papers as well as lighter weight kraft papers may again become

(Continued on page 98)

Newsprint Paper in 1948

By J. J. ZIMA

Statistician—Newsprint Service Bureau, New York

The overall record of the year 1948 indicates that the business boom in the United States has not yet petered out. However, as the year drew to an end, there were increasing signs that the long post-war rise in general business activity was leveling off. There had, of course, been somewhat similar indications — not perhaps as numerous as now — at various times since the inception of the boom, which although prematurely hailed as harbingers of a turning point in the business cycle, had been followed by a rise to even greater heights of activity.

For the paper and paperboard industry in North America — exclusive of Mexico — the year 1948 was one of record high production. On the basis of preliminary estimates, the industry last year turned out approximately 28,300,000 tons of paper and board which was an increase of somewhat more than 1,000,000 tons or about 4 percent above the 1947 total. Of the 1948 continental total, the United States produced nearly 78 percent—slightly more than its proportion of the 1947 total—while output in Canada represented not quite 21 percent and Newfoundland accounted for a little more than 1 percent. In view of this tremendous volume of production, it is not surprising that certain segments of the industry reportedly achieved a balance between supply and demand.

In 1948 the North American newsprint paper industry again exceeded all previous production records with the rate of increase over 1947 very closely approximating that of the paper and paperboard industry as a whole. However, this greater output plus a substantial increase in imports from overseas combined with a decrease in continental exports to other parts of the world was apparently not quite sufficient to fully satisfy demand in the United States.

SUPPLY

Production

Despite the loss of some production in certain areas due to power shortages, the all-time record high output of the North American newsprint mills in 1948 amounted to 5,850,000 tons. The previous peak production in 1947 was exceeded by 205,000 tons or nearly 4 percent, while the increase over 1946 was 573,000 tons or 11 percent. Also, in comparison with 1937—the best pre-war year—we find that 906,000 tons or 18 percent more newsprint was produced than in the earlier twelve-month period.

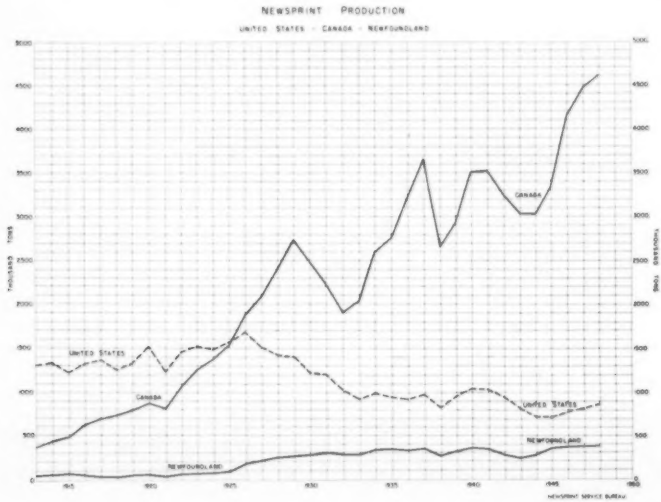
United States producers accounting for 14.8 percent of the continental total in 1948 recorded a slight increase in proportion of total output in comparison with 1947, while the Canadian and Newfoundland mills representing 78.7 percent and 6.5 percent respectively showed very small declines from their relative positions in 1947.

Production in Canada in 1948 amounted to 4,601,000 tons and was 154,000 tons or 3½ percent greater than in the previous record year of 1947. Due largely to coming into operation of new facilities and the probably more or less temporary conversion to newsprint of machines usually producing other grades, the 867,000 ton output of United States manufacturers was 42,000 tons or 5 percent greater than in 1947 and also was above that in any year since 1942. The Newfoundland mills which by the end of the first quarter of 1948 had turned out 12,000 tons less newsprint than in the same period of the preceding year, more than overcame this deficit in the balance of the year with the result that their output of 382,000 tons was nearly 9,000 tons greater than in 1947 and surpassed all previous records.

In the endeavor to keep pace with demand, for the second successive year the industry has found it necessary to make the fullest possible utilization of existing productive capacity.

Shipments of newsprint paper from all mills aggregated 5,834,000 tons and were but 16,000 tons less than production. They were, however, 128,000 tons or 2 percent greater than in 1947 and 576,000 tons more than in 1946. Canadian mills shipped 101,000 tons more in 1948 than in the preceding year, while there was an increase of 34,000 tons in United States shipments and a decrease of 7,000 tons in those made by Newfoundland producers.

As the result of shipments slightly below the level of production, total manufacturers' stocks on December 31, 1948, amounting to 118,000 tons were 16,000 tons or 16 percent greater than on the same date a year earlier, but on the other hand were 44,000 tons below the quantity they had at the end of 1946. Practically all of the increase was due to a nearly 10,000 ton rise in Canadian stocks and one of 6,000 tons in Newfoundland while United States mills had only a few hundred tons more than at the end of 1947. Stocks of all manufacturers in the aggregate represented about one week's production at last year's rate.



Exports

Canada: Official reports issued by the Dominion Bureau of Statistics indicate that in 1948 exports of newsprint paper from Canada amounted to 4,328,000 tons, a gain of 108,000 tons or 2½ percent over 1947. The value placed on these exports totaled $383,123,000 which represented 12½ percent of the total dollar volume of Canadian commodity exports. This was an increase of $40,830,000 or 12 percent more than in the preceding year. Both in point of tonnage and value thereof, exports in 1948 were the largest on record.

Table I, based on official Ottawa reports lists some of the more important destinations for Canadian newsprint exports in the post-war years in comparison with the five year pre-war average.

Of the total tonnage exported, 3,917,000 tons or 90½ percent went to the United States, while the balance of 411,000 tons was shipped to overseas destinations. The 1947 hitherto peak level of exports to the United States was exceeded by 242,000 tons or approximately 6½ percent, while there was a decline of 134,000 tons or 25 percent from the previous year in shipments elsewhere.

The largest overseas importers of Canadian newsprint in 1948 were the United Kingdom, Australia, South Africa, Brazil and New Zealand, to which was shipped a total of 197,000 tons compared with 309,000 tons in 1947. The decrease of 112,000 tons from the preceding year was due to a drastic decline of 118,000 tons in exports to Australia because of exchange difficulties and a decrease of 1,000 tons in the quantity shipped to Brazil, while 5,000 tons more went to the United Kingdom and 2,000 tons more to New Zealand. Shipments to South Africa in both years were approximately the same in quantity.

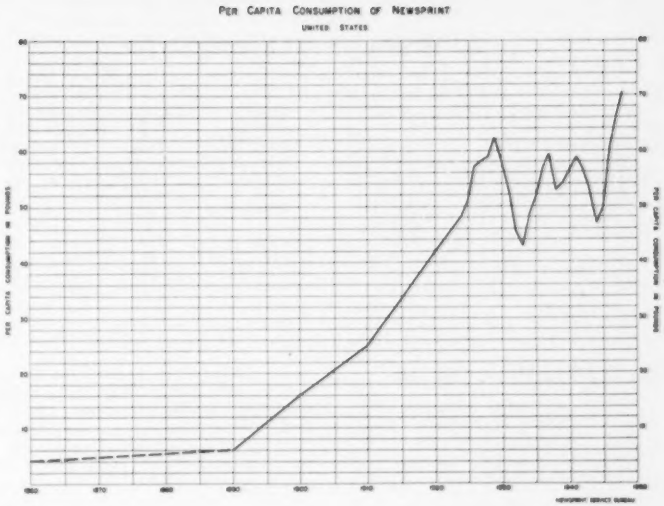
Newfoundland: Newfoundland in 1948 exported 375,000 tons of newsprint or approximately 6,000 tons less than in 1947. However, with the exception of 1947 and 1937, exports were greater than in any other year. Of this total, nearly two-thirds or 247,000 tons was shipped to the United States, while 128,000 tons went to other destinations. Exports to the United States in 1948 were 35,000 tons in excess of the preceding year while there was a decrease of 41,000 tons in overseas shipments which as a result were lower than in any year since 1942.

Table II which is based on mill reports shows the export data for the past 12 years.

No breakdown of the 1948 overseas total is yet available, but in 1947 the largest importers of Newfoundland newsprint were the United Kingdom, Mexico, Australia, Argentina and South Africa in the order listed.

United States: The Department of Commerce reports that in 1948 nearly 28,000 tons of domestic newsprint were exported from the United States or approximately the same quantity as in both preceding years, but 16,000 tons less than in 1945. About 39 percent of the total or 11,000 tons went to Mexico, while 7,000 tons went to the Philippines and slightly more than 2,000 tons to India and Pakistan. The only other country to take as much as 1,000 tons was Cuba.

In the aggregate, the North American newsprint industry last year shipped 567,000 tons of paper to help feed hungry newspaper presses in other parts of the world. This was approximately 175,000 tons less than in 1947 and far below that of the peak export year of 1940 when more than 900,000 tons were shipped to other markets. As in 1947, governmental import restrictions in certain countries again had a depressing effect on continental exports.



Imports

According to official reports from Washington, imports of newsprint paper into the United States in 1948 amounted to a record high 4,393,000 tons of which nearly 89 percent came from Canada, 6 percent from Europe and 5 percent from Newfoundland. Imports from Canada and Newfoundland were the largest on record while only in 1939 and 1937 were imports from Europe above those of last year.

Of the 267,000 tons of newsprint paper which in 1948 came into the United States from Europe, 132,000 tons came from Finland, 70,000 tons from Sweden, 28,000 tons each from France and Norway, with the balance coming from half a dozen other countries. The quantity imported from Finland was 10 percent above the target figure for exports to this country which Finnish producers had established at the beginning of 1948 and which they hope to improve on in 1949. The increase of 45,000 tons over 1947 in imports from Sweden was unexpectedly large, while tonnage imported from France and Norway also was greater than had been anticipated.

Altogether, imports represented 84 percent of the total quantity of newsprint available for consumption in the

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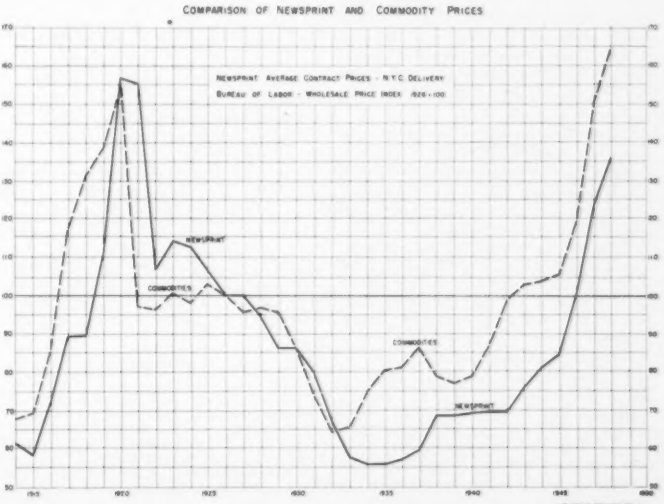


TABLE I

Canadian Newsprint Exports

(Short Tons)

	1948	1947	1946	Average 1939-1935
Australia	44,000	162,000	135,000	143,000
New Zealand	26,000	24,000	27,800	32,000
United Kingdom	61,000	56,000	83,000	141,000
Argentina	19,000	50,000	46,000	52,000
Brazil	29,000	30,000	43,000	6,000
Other South America	51,000	42,000	45,000	19,000
Cuba & Caribbean	40,000	37,000	37,000	13,000
South Africa	37,000	37,000	29,000	22,000
Others	104,000	107,000	90,000	94,000
Total Overseas	411,000	545,000	535,000	522,000
United States	3,917,000	3,675,000	3,323,000	2,299,000
Grand Total	4,328,000	4,220,000	3,858,000	2,821,000

Newsprint Paper in '48

(Continued from page 95)

United States in 1948 as against 74 percent 10 years earlier.

Stocks

As previously noted, stocks of all North American manufacturers on December 31, 1948, amounted to 118,000 tons. On the same date stocks on hand or in transit to the newspapers reporting to the American Newspaper Publishers Association were 458,000 tons or a total of 576,000 tons for the two groups. There was a rise from the preceding year of not far from 100,000 tons with more than four-fifths of the increase occurring in publishers' stocks.

Newsprint stocks of the A.N.P.A. publishers at the end of 1948 were considerably larger than at any year-end since 1942 and with the exception of that year and 1937, were higher than ever before. However, in relation to present consumption and the ever present possibility of delays in transportation during the winter months, they cannot be considered excessive. Stocks of this group of consumers at the end of last year represented only 39 days' supply as compared with 36 at the end of 1947, 59 at the close of 1942 and 75 in 1937.

CONSUMPTION

A tremendous volume of newspaper advertising linage — substantially in excess of all previous records — and a further rise in newspaper circulations resulted in the consumption last year of the greatest tonnage of newsprint paper in history. By all accounts, even more would have been used had it been available.

The 422 publishers or 525 newspapers in the United States reporting to the A.N.P.A. used 4,010,000 tons of newsprint paper in 1948. This was greater by 445,000 tons or nearly 12½ percent than the hitherto record consumption in 1947 and surpassed that of 1946 by 874,000 tons or 28 percent.

On the basis of the currently accepted estimate that in 1948 the A.N.-P.A. publishers used 78 percent of the newsprint consumed in the United States, the indicated total use of this grade of paper amounted to the all-time high of 5,141,000 tons. This was an increase of 388,000 tons or 8 percent over 1947. It will be noted that the percentage increase in total consumption was not as great as that of the A.N.P.A. group which indicates that use of newsprint by the small newspapers and other users has not kept pace with that of the larger metropolitan papers. This was a reversal of war-time conditions when the large users were officially ordered to curtail consumption much more drastically than the small consumers.

Estimated newsprint paper consumption, Census Bureau figures of population in the United States as of July 1 and the calculated pounds of paper used per capita since 1929 are as shown in Table III.

The 1948 per capita figure of nearly 70½ pounds was 4 pounds above that in 1947 and approximately 8 pounds greater than the pre-war peak of 1929, while the war-time low of 1944 was exceeded by more than 23 pounds or nearly 50 percent. It has been estimated that per capita use of all kinds of paper and paperboard in the United States in 1948 amounted to approximately 357 pounds of which about 20 percent was newsprint.

Table IV shows the percentage ups and downs in newsprint consumption in the past two decades.

The most spectacular rise in consumption in any one year over the immediately preceding one occurred in 1946 with an increase of more than 23 percent, while the greatest decrease was one of 12½ percent in 1932. In the two years following 1946 there has been a slowing down in the rate of increase.

Newspaper Sizes

Leading United States newspapers continued to grow in size in 1948 and on the average were substantially larger than in any year since 1929. However, as has been the case since the end of the war, the increase in size was not as great proportionately as the increase in newspaper advertising linage. It has been reported that currently about 58 percent of the average newspaper is devoted to advertising and the balance to editorial content compared with the usual pre-war ratio of 40 percent advertising to 60 percent editorial matter.

Sunday newspapers last year averaged 102 pages and were 8 pages larger than the average in 1947 and 18 pages more than in 1946. They were, however, not up to the average in 1929 and also were 9 pages below the all-time high of 1926.

In contrast to 1947, leading dailies in 1948 showed a greater percentage increase over the preceding year than did Sunday newspapers. They averaged 32 pages last year or 3 pages more than in 1947 and were equal, moreover, to the all-time peak of 1929.

Newspaper Circulations

The rising trend in newspaper circulations in the United States which began in 1939, continued uninterruptedly during the war years and spurted immediately thereafter, was still in evidence in 1948, although the rate of increase was not as great as in prior years.

The *Editor & Publisher* compilation of English-language newspaper circulations in the United States for the year ending September 30, 1948 shows a

TABLE II

Newsprint Exports from Newfoundland

(Short Tons)

	U. S. A.	Overseas	Total	% of Total to U. S. A.	% of Total to Overseas
1948	247,000	128,000	375,000	66	34
1947	212,000	169,000	381,000	56	44
1946	208,000	151,000	359,000	58	42
1945	122,000	194,000	316,000	39	61
1944	100,000	170,000	270,000	37	63
1943	131,000	132,000	263,000	50	50
1942	196,000	83,000	279,000	70	30
1941	217,000	129,000	346,000	63	37
1940	147,000	220,000	367,000	40	60
1939	87,000	176,000	263,000	33	67
1938	59,000	205,000	264,000	22	78
1937	135,000	241,000	376,000	36	64
Average	155,000	167,000	322,000	48	52

combined morning and evening daily total of 52,285,000 copies and 46,308,000 for Sunday papers. As in recent years, Sunday circulations with a gain of 1,157,000 copies or nearly 2½ percent, again registered the largest increase over the preceding year while the dailies had a combined gain of 612,000 copies or slightly more than 1 percent. Of the dailies, circulation of morning papers increased by 320,000 copies or 1½ percent, while the increase for evening papers amounted to 292,000 copies or approximately 1 per cent.

It is also reported that there were 1,781 English-language dailies published in the United States in 1948 and 530 Sunday papers. This was an increase of 12—all evening papers—over the number of dailies published in 1947 while there were 19 more Sunday newspapers than in the preceding year.

Table V shows the circulation of all English-language newspapers in the United States from 1929 to date.

TABLE III

Estimated Newsprint Paper Consumption

Yr.	Population	Newsprint Paper Used 1,000 Tons	Per Capita (Pounds)
'29	121,526,000	3,780	62.2
'30	123,091,000	3,563	57.9
'31	124,113,000	3,245	52.3
'32	124,974,000	2,840	45.4
'33	125,770,000	2,690	42.8
'34	126,626,000	3,058	48.3
'35	127,521,000	3,300	51.7
'36	128,429,000	3,650	56.8
'37	129,257,000	3,830	59.3
'38	130,215,000	3,458	53.1
'39	131,878,000	3,550	54.1
40	132,817,000	3,730	56.2
'41	133,923,000	3,930	58.7
'42	134,633,000	3,800	56.4
'43	136,497,000	3,650	53.5
44	138,101,000	3,250	47.1
'45	139,621,000	3,480	49.8
'46	141,229,000	4,296	60.8
47	143,382,000	4,753	66.3
'48	146,116,000	5,141	70.4

Advertising

For advertising in general 1948 was another boom year with over-all expenditures in all media estimated to have been about 10 per cent greater than in 1947. It is reported, however, that the huge post-war advertising boom is showing some signs of slowing down.

Newspapers: Newspaper advertising in 1948 continued its spectacular post-war rise. A record high total of 2,263,446,000 agate lines of advertising were carried last year in newspapers in 52 major cities of the United States as reported by Media Records. This was an increase of 254,910,000 lines or 13 per cent over the previous record total in 1947, while the pre-war high of 1929 was exceeded by 366,233,000 lines or 19 per cent.

All classes recorded gains over 1947 with the greatest percentage increase occurring in the automotive classification and the next largest in retail advertising. However, when we look at 1929, the picture is somewhat different in that last year only two classifications —retail and classified—registered increases over the pre-war record year while general advertising still was not quite up to the levels of 20 years ago. Automotive advertising despite the fact that it was nearly double the 1946 volume yet was 45 per cent less than in 1929 while financial advertising which bulks least in the overall total was 65 per cent less. Despite reported plans of the automotive industry to intensify and expand advertising campaigns in 1949 with even greater use of newspaper space than in 1948, this type of advertising in newspapers has a long road to travel before 1929 volume is approximated.

It has been estimated by the Bureau of Advertising of the A.N.P.A. that newspaper expenditures of national advertisers in 1948 amounted to an all-time record high of $434,000,000 which was $77,000,000 or 21 per cent more than in the preceding year. Last year was the third in a series of consecutive record breaking years.

Data concerning advertising in small newspapers are very meager but an indication that they also shared in the advertising boom is the report that national advertisers in 1948 spent $12,300,000 for space in weekly newspapers or about 28 per cent more than in 1947.

TABLE IV

Yearly Changes

U. S. Newsprint Consumption

Percentage Increase over Preceding Year			
'29	7.5	'39	2.7
'30	5.7*	'40	5.1
'31	8.9*	'41	5.4
'32	12.5*	'42	3.3*
'33	5.3*	'43	3.9*
'34	13.7	'44	11.0*
'35	7.9	'45	7.1
'36	10.6	'46	23.4
'37	4.9	'47	10.6
'38	9.7*	'48	8.2

*Decrease

Periodicals: In contrast to the large increase in newspaper advertising, the record of the periodicals is not good. As reported by Printers' Ink, magazine advertising linage in 1948 was 6 per cent below that of the preceding year and 11 per cent under 1946 levels. On the other hand, it was slightly ahead of 1945 and 16 per cent greater than in 1944.

Despite declining linage, it has been stated that 1948 advertising revenue for periodicals was the greatest on record with an increase of nearly 5 per cent over 1947. In the order listed, the largest users of magazine space classified by products are reported as follows: food and food products; apparel, footwear and accessories; toiletries and toilet goods; automotive, accessories and equipment and household equipment and supplies.

Radio: As in the past at this time, information regarding advertisers' expenditures via radio is only fragmentary. To date only two of the national networks — American Broadcasting Company and the Mutual Broadcasting System—have released data on gross billings of their chains. The former reports billings at an all-time high of $44,303,000 which exceeded those of the preceding year by nearly 2 per cent, while the latter's 1948 total of $22,769,000 also represented an almost identical increase over 1947.

The National Association of Broadcasters estimates 1948 gross radio advertising revenue at about $400,000,000 which represents an increase of $26,000,000, or 7 per cent over the 1947 total.

Television: This comparative newcomer in the advertising field expanded considerably during the past year and its presence is beginning to be felt by other media, to date principally radio.

There are now 58 television stations on the air in 32 cities with more than 1,000,000 sets in use and the number of advertisers—mostly local retailers—via this medium has grown to more than 800. It is said that at the present time more than 36 per cent of the population of the United States is within viewing range of stations now operating. In addition, 66 stations are in process of construction in 41 other cities. Some indication of its rate of growth may be gleaned from the fact that in 1946 only 6,500 sets were produced, 178,000 in 1947, about 850,000 in 1948 while 1949 production is estimated at 2,000,000.

There appears to be a difference of opinion as to the effect television may have on the volume of newspaper advertising with some professing to believe that it will not be very great.

(Continued on page 98)

TABLE V

English Language Newspapers—

U. S. Circulation

Average for 12 Mo. Ending Sept. 30	Daily	Sunday
'48	52,285,000	46,308,000
'47	51,673,000	45,151,000
'46	50,928,000	43,665,000
'45	48,384,000	39,860,000
'44	45,955,000	37,946,000
'43	44,393,000	37,292,000
'42	43,375,000	35,293,000
'41	42,080,000	33,436,000
40	41,132,000	32,371,000
'39	39,671,000	31,519,000
'38	39,572,000	30,481,000
37	41,419,000	30,957,000
'36	40,292,000	29,962,000
'35	38,156,000	28,147,000
'34	36,709,000	26,545,000
'33	35,175,000	24,041,000
'32	37,537,000	25,268,000
'31	38,648,000	25,902,000
'30	39,834,000	26,951,000
'29	39,299,000	27,098,000

Newsprint Paper in 1948

(Continued from page 97)

while others take the opposite view. It has been pointed out that television eliminates the one great advantage that newspaper advertising has enjoyed over radio which is the newspaper's ability to illustrate the advertised product.

OUTLOOK

The foregoing has been a discussion of past history but of more immediate interest and concern are the prospects for business in the future.

Currently there appears to be more uncertainty among business men and economists as to the future course of business than there has been at any time in recent years. Most experts reportedly believe that no pronounced descent from the very high levels of the recent past is in prospect while, on the other hand, it is quite generally expected that overall business activity in 1949 will be not quite as good as in 1948. Although activity in important capital goods industries is still high, there is a good deal of readjustment going on in other lines, but with a looked-for leveling out at a point not far below the boom's peak.

Assuming that no appreciable decline in business in general will develop and the expectation that more wide-spread intensification of competition in many lines will necessitate a greater reliance on advertising to help move goods, it would appear that a continuation of the present high level of demand for newsprint paper can be expected at least in the immediate future.

Another New High

(Continued from page 60)

levels of Canadian and West Coast pulps, which since the war have been the bulk of the supply used by converting mills.

U. S. pulp producers in 1948 manufactured 12,872,000 tons of wood pulp —11,946,000 tons in 1947. In 1948, imports from Canada, Mexico and Newfoundland were 1,602,000 tons compared with 1,538,000 tons a year earlier. Imports from Europe amounted to 575,000 tons, against 792,000 tons in 1947. In the last quarter of 1948, European imports amounted to only 74,000 tons as compared with 192,000 tons in the 4th quarter of 1947.

The new supply (domestic production plus imports—minus exports) of wood pulp in the U.S. in 1948 was 14,955,000 tons against a supply of 14,146,000 tons a year earlier. The gain took place entirely at integrated mills. The supply for converting mills was about the same as in 1947 but the supply was adequate to meet all requirements.

The indicated need (in the years immediately ahead) of about 1,000 tons per day of additional bleached chemical market pulps (paper pulp and dissolving pulp), is in a fair way of being met. About half of this production came into operation in the closing months of 1948 and the other half is expected to come into operation later this year and in the early months of 1950.

The outlook for the pulp market in 1949 is, of course, largely dependent upon the demands for paper and paper products. The prospective supply, even with substantially reduced importations from Europe, appears adequate to meet the current needs of converting paper mills, as well as the requirements of non-paper users, such as the rayon, cellophane and plastic industries.

Summary and Prospects for 1949

There are more differences of opinion about the prospects for 1949 than there were a year ago for 1948. Early in 1948, it was said that the paper industry would need to concentrate on two main challenges:

1). The trend towards a buyer's market

2). Further increases in costs until the inflationary spiral is broken

It is hardly necessary to point out that the direction of the trend, in evidence a year ago, now has become more definite. The seller's market for the paper industry and for industry generally in the United States has given way to a buyer's market. A buyer's market is not abnormal for the paper industry. It was the usual condition of business in nearly all the years preceding World War I and World War II. All have been expecting competition to return. It has. We cannot have "free enterprise" without a competitive economy.

At the turn of the year, it was quite clear that the inflationary spiral was broken. Production, and the supply of goods, have outrun demand. Nevertheless, there is fear that the arresting of inflationary pressures may be temporary because of the contemplated further increases in government spending for non-productive purposes. Thus far, the readjustments have not been severe, because real incomes are high enough to absorb relatively large quantities of goods.

Should the general volume of 1949 business in the U. S. be off by 5 percent to 7 percent, consumption requirements of domestic paper and paperboard are expected to be somewhat under 21,000,000 tons. The present annual capacity of 23,240,000 tons will be augmented during the course of 1949 by an additional 1,000,000 tons.

Objectively, the paper and paperboard industry can look forward to an increased consumption of its products by an increasing number of consumers, as new uses are discovered and present uses are expanded, and because our educational level and living standards—each important factors in demand for paper—will continue to rise. The return to a buyer's market and to seasonal fluctuations may temporarily retard the upward course of the production curve but the long range prospect continues bright.

Unbleached Kraft Paper

(Continued from page 93)

available. These variations from extended runs of paper of one kind and one basis weight definitely slow down production. In consequence, it is our present thought that this industry's production ratio during 1949 will not exceed that of 1948. In that year the industry operated at 95 percent of capacity, a most satisfactory rate of operation. Now with slightly increased capacity, an equivalent rate of operation would result in a higher production for 1949. We would estimate this at somewhere between 2,200,000 and 2,250,000 tons. This would result in the establishment of a new record volume for kraft paper production in a year in which other industries expect to suffer a decline. The vitality of the economy, however, should require this amount of kraft paper.

Punjab Chemical Plant

WASHINGTON—Expanded production is planned by the Alkali & Chemical Corp. of India, Ltd., subsidiary of Imperial Chemical Industries of the United Kingdom, according to a report of the Department of Commerce.

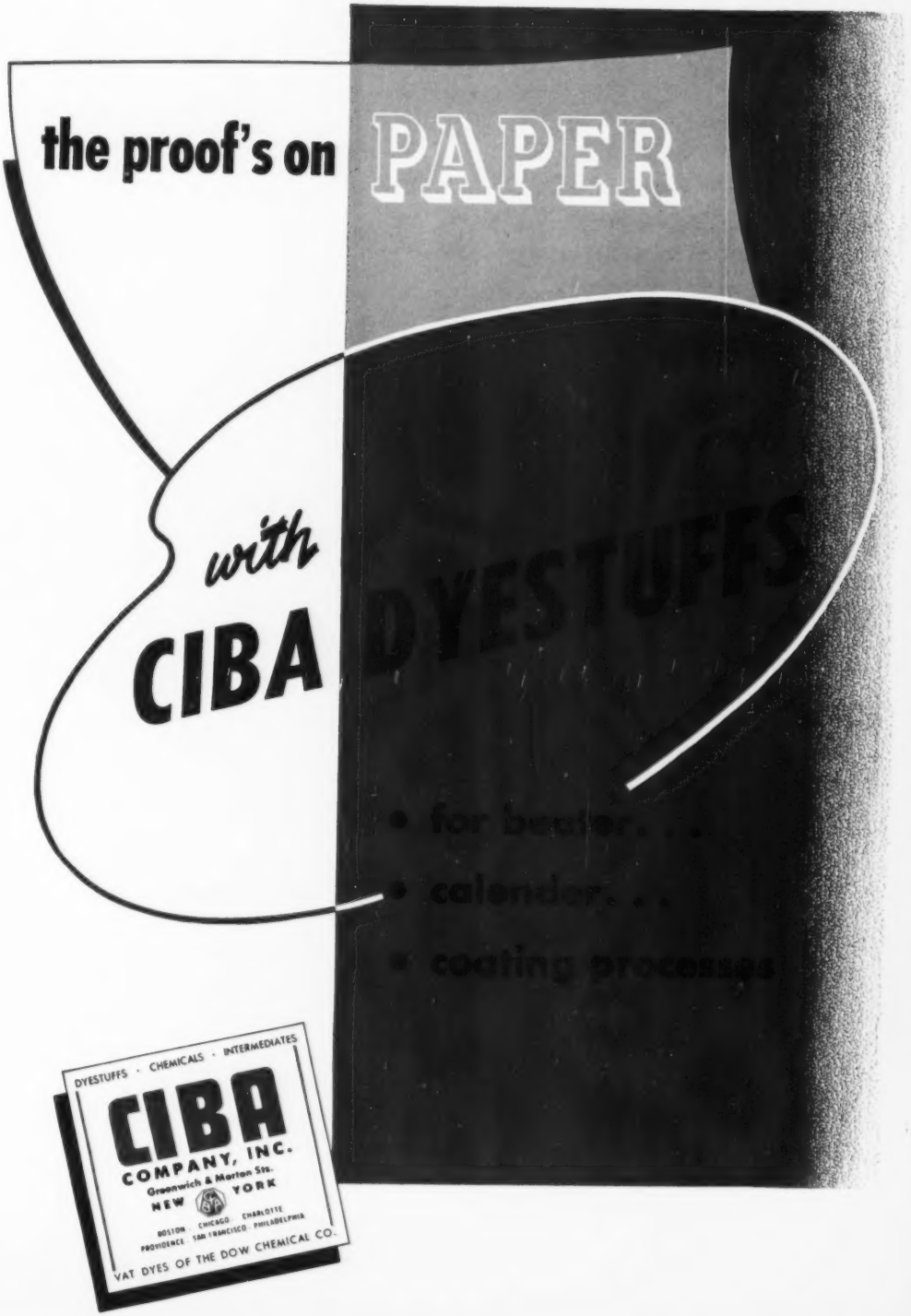
The Indian subsidiary was established in 1937 for manufacture of caustic soda, soda ash, chlorine and other heavy chemicals. Its plants include a caustic soda and chlorine manufactory near Calcutta, and a soda ash plant in the West Punjab, now Pakistan. Plant construction did not get well started until just before the war.

While information on projected operations is released only guardedly, the Department said work on some of the expanded facilities is already started. The present chlorine plant is to be expanded to 4,150 tons per year, from 1,500, with a corresponding increase in caustic soda output. Extensions are expected to be completed in 1951.

Also under construction is a plant for production of hydrochloric acid, which will utilize hydrogen and chlorine from the chlorine plant, and this installation was expected to be in production early in 1949.

IPI Essay Contest

NEW YORK — The five judges who will pick 30 national prize winners in the 13th annual IPI Essay Contest, sponsored by International Printing Ink in cooperation with the National Graphic Arts Educational Ass'n. are: Harry L. Gage, graphic arts consultant to Mergenthaler Linotype Co. (chairman); Carl E. Dunnagan, president, Printing Industries of America, Inc.; Lou Little, head football coach, Columbia University; Miss Mary Jean Simpson, dean of women, University of Vermont and State Agricultural College; and William G. Simpson, president, C. T. Dearing Printing Co., Louisville, Ky.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VAT DYES OF THE DOW CHEMICAL CO.

Potato Starch Production

(Continued from page 90)

surplus there. The producers are unwilling to continue without an assured market for the starch. They suggest that any output under the proposed scheme should be exported by the ECA. Further details may be known soon.

Domestic Outlets

The domestic outlets for potato starch, those which can be considered likely to endure, have undoubtedly expanded in the past decade, but not nearly enough to keep pace with the growth in production facilities. Wartime outlets, such as glucose and exports, have vanished. There has been little change in textile demands, but adhesives (particularly in corrugating and laminating of paper board), prepared foods, and a variety of miscellaneous uses, account for increases of about 8,000,000 lbs. annually.

For years, paper mills have used about 10,000,000 pounds annually of pre-gelatinized potato starch produced on the hot roll, but only recently have they used the native thick-boiling starch in any volume. It is probable that another 10,000,000 pounds or more will be used this year in tub-sizing, coating, calendering and in the beater. About 1,500,000 pounds are also employed in a patented precipitation process, with which many paper mill men are familiar.

It is estimated that U.S.A. consumption is now approximately 58,000,000 pounds annually, compared with 30,-100,000 pounds ten years ago. Consumption could be increased another 50,000,000 pounds without straining existing production facilities. Nor is this the limit.

Idaho and Maine, being now developed to the full extent of the raw material available, could not expand, but there are two or three other regions where potato crops are sufficiently large and economically concentrated for starch plants, if there were reasonable assurance of markets for the additional output.

No Longer a Specialty

With production so far ahead of consumption, potato starch is no longer a specialty starch, but can now be regarded as a basic starch, much like corn and wheat starches, both in availability and price range. However, in regard to continuity of supply, the situation is different. Grain can be stored for years, if necessary, and hence cereal starches are available throughout the year. The wet corn miller can cover his grain requirements on the Exchange, taking the actual raw materials as he needs them, or when advantageously priced.

The potato starch processor cannot hedge and must take his culls as they become available, in the five or six months following the harvest because potatoes cannot be stored longer. Potatoes, are about 82 percent water, and bulky, so to avoid expensive storage, they must be reduced to starch within a few days of delivery.

It is necessary that the starch plants know fairly early in the season what starch will be required during the following Spring and Summer, when processing ceases, so that a sufficient inventory can then be accumulated.

Cotton mills and other regular users understand this, and are in the habit of making advance commitments. The paper industry must do likewise to assure continuity of supplies.

No other natural coating, adhesive or sizing material can show almost 100 percent increased use in the past ten years and behind this increase is an interesting story which bears on the technical aspects of what potato starch may do for the paper industry.

Potato Starch Characteristics

As a tuber starch, it differs from the cereal starches in many ways. Potato starch is nearer to tapioca flour, also a root starch, but still there are wide differences. It cannot always be used to replace more familiar sizing materials without variation of procedure, although, according to experienced paper men, there are no particular problems to be encountered in using the material either for surface application or for dry addition to the beater.

Nevertheless, laboratory and production men may have to do considerable work to find the pearl in this oyster. Evidently a number of paper mills are finding interesting applications, judging by the increasing quantities they are now consuming. This is not solely a question of price, although in some localities on the West coast and in New England it is cheaper than competitive materials. However, other mills not so fortunately situated have also become regular buyers of potato starch during the past year.

A serious handicap in the past has been the wide variation in the quality of potato starch, even from the same producer. The Idaho plants, being few in number and relatively large and modern, are making notable improvement in uniformity and general level of quality. Several plants are cooperating to establish a specification, high enough to commend their starch to discriminating users, and to confine variations to narrow and commercially acceptable tolerances. This matter is being pursued diligently, with the aid of competent technical advice and the assistance of interested consumers. A tentative specification should be forthcoming soon, and a permanent standard will follow after sufficient time to get the consumers' reactions. Now is the time for the paper mills to register their ideas on a potato starch suitable for their industry.

Maine has a more complex problem, the 20 plants there varying widely in age, size, type of equipment, and technical and financial resources. A few can undoubtedly produce good starch, but the smaller, old-fashioned units could not meet a rigid specification. Grading Maine starch into two or three qualities, with price differentials, has been suggested as one way out.

Even though availability, price and quality problems are well on the way to solution, much depends on the technical skill with which the starch is applied. Its distinctive characteristics require more than rule-of-thumb methods. Its granule is the largest of all commercial starches, averaging about 42 microns. The high amylopectin content, ascribed to the outer part of the granule, is responsible for the naturally high viscosity of pastes made from the native starch. Cotton mills, long familiar with it, say potato starch is the easiest starch to convert with enzymes, but a West Coast paper mill recently gave a different opinion, after trial runs for clay coating. In this connection a well-known paper laboratory reported that the quantity required could be reduced about 25 percent when potato starch was substituted for the usual starches, but not enough work has been done to confirm this possibility under plant conditions. With potato starch it has been found wise to use less starch than was formerly employed in tub-sizing of sulphite bonds and similar applications.

Starch now being produced in Idaho has a reflectance guaranteed better than 96 percent relative to magnesium oxide, a striking improvement of recent date. This has been achieved without bleaching, which tends to breakdown the viscosity. Attainment of uniform viscosity, because of inherent variations in the raw material, presents the greatest difficulty, but even for this it is believed that answers are impending. Measures taken by the Idaho plants are promising.

Potato starch gives the clearest film of any starch, a matter of great significance when brightness in coated paper is desired. It also produces the most flexible of all starch films. Because of its low gelatinization point, 140° F., the lowest of all starches, it may find some special applications. It is the most hygroscopic starch available. Sensitivity of potato starch to alkalis is marked, and must be taken into account when using it with materials such as caustic soda.

Subject Merits Exploration

There is much to learn about potato starch and it will not prove suitable for all mills, but we now have ample domestic sources and reasonable prices, and the paper industry will find it worth while to explore the subject thoroughly.

The Rosin and Rosin Size Outlook for 1949

By J. M. WALSH

Manager—Paper Chemicals Dep't., American Cyanamid Co., New York City

The price of rosin size is dependent largely on the Savannah market for rosin. The U.S. entered the year 1948 with relatively low stocks of rosin and the price for the common grades such as K-Gum was $8.90. The market remained firm until the middle of February, when weakness developed largely in sympathy with the commodity break that occurred in that month. Rosin kept dropping until the spring months and reached a level around $6.75, when the Government support price under the Bankhead-Steagall Act took effect and prices firmed somewhat. Production continued at a fairly heavy rate during the spring and summer months and the weakness that prevailed for the naval stores caused the Government to increase the floor price for K grade to $7.97. By the end of the year approximately 410,000 barrels of gum rosin were under Government loan. Due to a lower rate in rosin exports and some drop in domestic consumption of rosin, the price continued basically weak and at no time during the production year reached the full floor price.

The price of rosin size for the paper industry moved up and down in accordance with the Savannah market. Demand from the paper trade continued very good, as the paper industry operated close to 100 percent average capacity during the entire year, although there was some slight leveling off in November and December. The naval stores year runs from April 1 to March 31; therefore, all of the figures are not in for the current production year, but it is estimated that production of gum and wood rosin for the year ending March 31, 1949, will be approximately ten percent higher than that of the previous year. Production for the previous year was 1,990,831 drums.

J. M. WALSH

Prospects for the year 1949 are good, although the government may elect to support prices for gum rosin at 90 percent of capacity. The support price for the new crop had not been named when this article was written. It is generally believed that the parity price will be somewhat lower which, of course, will have the effect of lowering the price of rosin size.

Some of the lower grades of wood rosins and, therefore, rosin size, are marketed at a price considerably under the Savannah basis. For the past several years the lower grades of wood rosin FF and lower have not followed the Savannah market. The tendency of this market has been rather weak due to a heavy production and lack of exports and consumption.

U. S. Production of Woodpulp and Consumption of Wood Pulp, Pulpwood and Other Fibrous Materials In the Manufacture of Paper and Board By Kinds, 1948-1947

(Source—U. S. Dep't. of Commerce)

Type of material	Production 1948[1]	Production 1947	Consumption 1948[1]	Consumption 1947
	(Tons of 2,000 pounds)			
ALL FIBROUS MATERIALS (excluding pulpwood)	12,872,292	11,945,864	23,410,799	22,783,472
Wood pulp, total	12,872,292	11,945,864	14,374,586	13,285,435
Sulphite, total	2,811,216	2,795,962	3,332,928	3,229,339
Bleached	1,909,402	1,901,945	1,855,881	1,792,091
Unbleached	901,814	894,017	1,477,047	1,437,248
Sulphate, total	6,013,696	5,356,710	6,663,312	5,860,288
Bleached	1,040,055	908,911	1,305,283	1,067,858
Semibleached	224,751	193,156	251,465	198,857
Unbleached	4,748,890	4,254,643	5,106,564	4,593,573
Soda	509,864	491,580	521,278	519,651
Groundwood	2,175,107	2,049,814	2,481,894	2,361,110
All other	1,362,409	1,251,793	1,375,174	1,315,047
Fibrous materials other than wood pulp, total			9,036,213	9,498,037
Waste paper			7,584,501	8,009,052
Straw			523,611	520,706
Rags			415,668	462,388
Flax			60,969	65,940
Miscellaneous fiber			451,464	439,951
	(Cords of 128 cu. ft.—Roughwood basis)			
Pulpwood, total			21,189,458	19,714,229
Softwood			18,490,916	17,021,974
Hardwood			2,698,542	2,692,255

[1] Preliminary. These data are estimated to give 100 percent coverage of the industry. The over-all percentage of estimates are: Wood pulp production 1.5 percent; Wood pulp consumption 1.0 percent; Consumption of all other fibrous materials 1.4 percent; and Consumption of pulpwood 2.2 percent. In no case does the proportion of estimate for the several grades of wood pulp, other fibrous materials and pulpwood exceed 5.0 percent.

Can. Logging Flourishes

OTTAWA — After a bad start, conditions in the bush on the Gatineau and Ottawa Rivers are reported so good now that operations of the Canadian International Paper Co. and the E. B. Eddy Co. show that lumberjacks are taking home from $6 to $9 per day. The winter cut on these rivers is running into hundreds of thousands of cords, and there is lots of snow in the bush as well as ice on the lakes, with the flow of water into Lake Baskatong being much higher than last year. This latter report means an improved flow into Lake Baskatong, the reservoir of the Gatineau River, and an improvement in the power situation.

There is at least three feet of snow and labor is adequate, with the men earning from $7 to $9 per cord and their take home pay is from $6 up. As a result, the Canadian International Paper Co. states that it will take out 420,000 cords of spruce, balsam and white pine on the Gatineau waters this spring, the entire production from its Clova and Maniwaki operations. The E. B. Eddy Co. has 50 cords of pulpwood stored at Quyon which will come down this spring. It will also have 55,000 cords of spruce and balsam on the Gatineau and 10,000 cords from the Black River. In addition, there will be 12,000,000 feet of sawlogs brought down the Ottawa River by an independent contractor.

TOUCHÉ!

As the challenged party in the mounting battle for markets, you have the choice of weapons. We submit that you'll stand a better chance if you reach for a rapier and shun the baseball bat. Which is another way of saying that you should replace outmoded equipment with modern Moore & White machines.

The tired, sluggish, cumbersome installations of a bygone era ill equip you to engage in today's savage thrust-and-parry for profits. Moore & White machines—customized to your needs with loving care, by Moore & White engineers—will strike home at the vulnerable spot in your problem: inordinately high operating costs.

You can't have a better second for the scuffle than a Moore & White sales-engineer. Back of him are the augmented engineering and production resources of an old, reputable house. Before you is a burgeoning balance sheet most satisfactory to behold, if you avail yourself of his counsel.

The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE • PHILADELPHIA 32, PA.

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

"Cash Register Complex" a Fallacy

By D. C. EVEREST

President—Marathon Corp., Rothschild, Wis.

Mr. Chairman, Ladies and Gentlemen:

I am pleased to have the opportunity to speak at this meeting of the members of the Sulphite Paper Manufacturers Association.

Having been associated with your group during the days of Parks, Stewartson, Kessinger, Bishop, and finally Tom Burke, I have a sense of "old home week" in getting together with you again.

I had thought that I would be relieved of talking to people again about the outlook in the paper industry but, with the pessimistic attitude now being displayed on the part of some in relation to the paper business and all other business, I could not refrain from accepting your chairman's invitation to speak at this meeting.

I have been through many imaginary and predicted depressions, but I have been through only two of any major importance. All my life I have worried about many things, most of which never happened. I also know the old trick of constant repetition of dire predictions and their psychological effect on people who do not stop to think. It is unfortunate that the non-thinking type are in the vast majority.

If the economy of this country has reached a point where it cannot withstand a slight falling off in the placement of business without going into a tailspin or everyone developing a "case of jitters," then the country is in a precarious situation, indeed. It seems that during the last ten years we have developed a cash-register complex. Everyone wants to check the cash register at night and know exactly how much money they made that day, and if today's "take" is not more than yesterday's then, in their manner of thinking, everything has "gone to hell in a hand basket" and "there is no health in us."

I recently prepared a chart for distribution among the stockholders of the corporation I represent and among paper mill officials and others, covering the period from 1900 to 1948, inclusive. Incidentally, this covers the period of my connection with the industry. This chart shows the total consumption of paper and paperboard in millions of tons, the national income in billions of dollars, the population of the United States in millions of persons, and the consumption of paper and paperboard per capita in pounds. I refer to it in the beginning of this talk as, judging by the comments I have received, I am confident this fundamental information has not been presented before in this way. This chart is the basis for my optimism and also my criticism of partially informed persons who presume to tell others just what is going to happen in our business.

D. C. EVEREST

Let me emphasize what this chart shows. I will not go over the whole period, during which time total consumption increased from 2.2 to 26 million tons and consumption per capita from 58 to 353 pounds, but will confine my remarks to the period from 1939 to 1948, inclusive. This is a period of ten years and is the length of time bankers and others ordinarily look at, in consideration of your earnings when you require financing. This chart shows how fallacious such an idea may be as no business situation remains static. It either moves ahead or it moves backward, except in periods of governmental control when it may remain constant as it did during the four years 1942 to 1945, inclusive. The only appraisal of a business which amounts to anything is one which gives consideration of what it is doing at the time and what it may be expected to do in the future.

Let us take 1939 as a starting point. That year this country had a population of 131 million people; it consumed 15.9 million tons of paper and paperboard or 243 pounds per capita. In 1948, however, there were 148 million people in this country and they consumed 26 million tons of paper and paperboard or 353 pounds per capita. Therefore, in the last ten years this country has increased in population by 17 million people or 13 per cent. This is one of the points I want to emphasize. An increase of 17 million people in ten years represents 141 per cent of the total population of the Dominion of Canada, and what would some manufacturers give for the Canadian market for their products! Yet, in this country in ten years we have added nearly one and one-half times the population of Canada as potential customers, free of tariff barriers, and raised in the environment of the highest standard of living of any country on earth.

In 1948 we consumed 110 pounds more per person than in 1939, an increase of 45 per cent. Our overall consumption was 10.1 million tons more than in 1939, an increase of 63 per cent and, mind you, we did not satisfy the demand for paper and paperboard during the controlled war years of 1942 to and including 1945. It is significant to note that in 1941 consumption was 20.8 million tons, dropping in 1942 to 19.8 million tons, holding constant at 19.4 million tons for two years, and then stepping up to 19.7 million tons during the last year of the war. What happened immediately following the removal of controls? In 1946 we consumed 22.5 million tons, in 1947—24.6 million tons, and in 1948, to be exact, 26,145,131 tons. This is a remarkable record for increased use of any product and one which the most optimistic person would not have predicted a few years ago.

What is the reason for this great increase? As I see it, several factors contribute to this tremendous increase in the use of paper and paperboard.

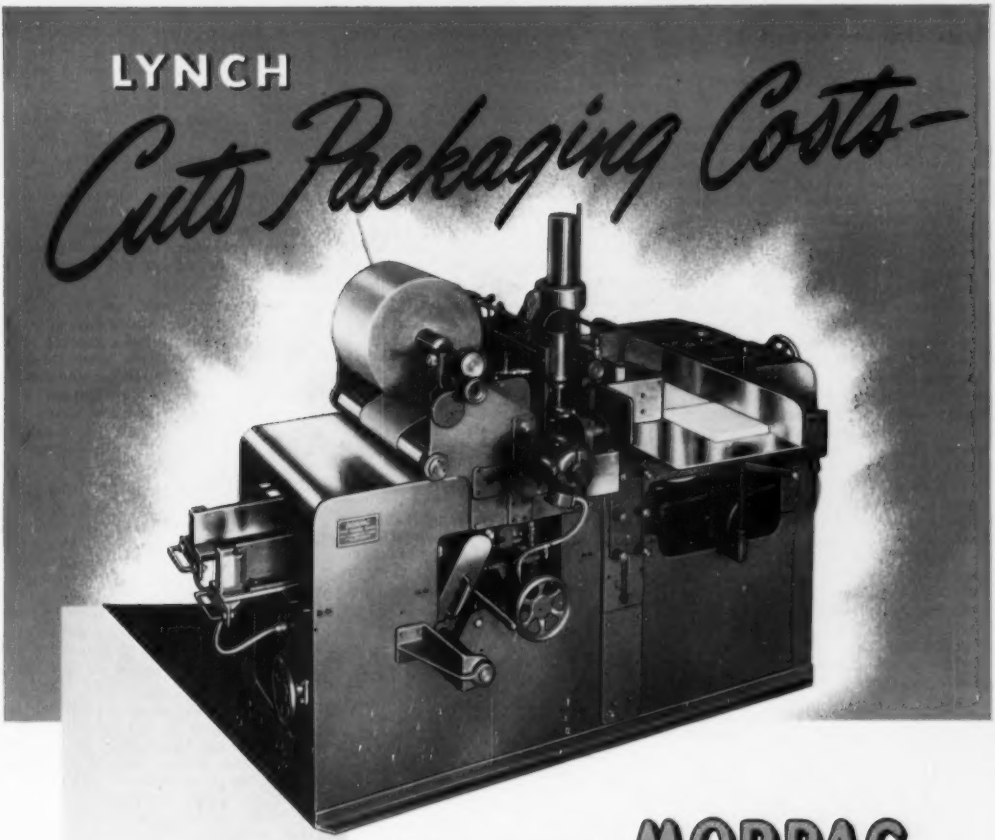
First and foremost: There is no economic substitute for these products. There is no satisfactory material for wrapping that affords the same protection that you can buy as low a price per square foot. There is no material available on which you can print and get as satisfactory a reproduction result in reading or display lineage at so low a cost per square foot. Basically, this industry is on a firmer footing than any other I know of, inasmuch as there is no substitute-material supply hanging over us to threaten the stability of the industry. True, there is substitution within the industry but even that dislocation situation has improved within the past few years. The only reason we were able to produce as much tonnage as we did in 1948 was that mills were specializing on fewer grades with longer runs and less machine changes.

(Continued on page 106)

An address delivered at the luncheon meeting of the Sulphite Paper Mfr's. Ass'n., at Hotel Waldorf-Astoria, New York City, February 21, 1949.

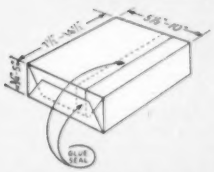
LYNCH

Cuts Packaging Costs—



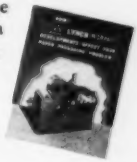
. . . with their Improved MORPAC

PAPER PACKAGING MACHINE



Lynch MORPAC turns out neat, trim packages with square corners and properly sealed edges, adding more sales appeal to your product. It will handle most rectangular objects within its size range.

If production costs worry you, try stream-lining that packaging operation. The Lynch MORPAC, illustrated, is an exclusive development for the graphic arts. Designed primarily to wrap or band ream paper, tablets and pads, loose leaf fillers and books of all kinds, it handles most rectangular objects within its size range. Requiring only one operator, it wraps up to 1,000 packages per hour. Speed plus savings from 30% to 40% per package on wrapper application mean it pays for itself in a relatively short time. Write for folder giving more details on how Lynch MORPAC Paper Packaging Machine saves you money. →



PAR AIR COMPRESSORS

PAR REFRIGERATION COMPRESSORS

WRAP-O-MATIC CANDY & COOKIE WRAPPING MACHINES

LYNCH CORPORATION

PACKAGE MACHINERY DIVISION

TOLEDO 1, OHIO U.S.A.

MORPAC PAPER PACKAGING MACHINES

MORPAC BUTTER & OLEO PACKAGING MACHINES

GLASS FORMING MACHINES

Cash Register Complex

(Continued from page 104)

Second: We have developed new grades of paper and paperboard and, most important, new uses for both new and old grades. Every new use and new application has been brought about for some economic reason. Perhaps the most outstanding example has been the tremendous development in automatic wrapping and packaging machinery. All of these machines must use paper or packages having certain characteristics in order that they may function properly and perform the service for which they were designed. These developments were not made just to satisfy somone's idea of a good merchandising campaign. These machines were built to reduce costs. With the increased demand for goods in all consumer lines, manufacturers found that there was not space available in their plants to accommodate the number of people required to hand-wrap and pack their products. Wage rates increased and costs mounted. They had to find some way to meet the situation. They did it through the use of automatic wrapping and packaging machinery. Their products are more uniformly wrapped and they have eliminated one of their greatest headaches. No plant of any consequence built since 1940 has anywhere near the space available to enable the owner to return to the old method of wrapping and packaging. Wage rates are still high and the machine methods will always cost less, thus lending stability to the use of the specialized paper and board products.

Third: The increase in population means a continued high rate of use of all paper products. In ten years, in addition to the increase brought about through new uses, we have 17,000,000 more potential customers. Barring some dire calamity, I see no reason to doubt that population will continue to increase. People live longer and more babies are born. From the cradle to the grave, from birth certificate to death certificate, people cannot get away from the use of paper products in some form. If paper production was suspended for one month, this country would be in the worst mess it has ever known.

Fourth: In addition to the productive capacity of paper and paperboard which has been built up in this country, we have another reassuring factor that has been augmented during the ten year period and which few take into account in their thinking of the stability and continuity of this business. For many years a number of companies depended largely on the importation of their supplies of all grades of pulp and much of their waste paper and rags from abroad.

As you look over this situation for a period of thirty-five years, you will find that we have had interruptions in the free flow of shipments from abroad amounting to approximately ten years' importations, or for about thirty per cent of that time there has been difficulty in securing these supplies. With that situation in mind there has been built up in the North American continent a pulp producing capacity and a waste collection business sufficient to take care of the paper and paperboard productive capacity. Such a condition is a healthy one and deliveries now depend only on rail, water, and truck transportation within our own country, Canada and Mexico. Certainly we cannot improve on that situation in our long range planning for continuity of operations.

Fifth: Research and development in many fields have served to increase yields and extend our wood supply through utilization of certain species not in general use ten years ago. Innovations have become standard practice. The number of scientists and technicians engaged in problems relating to this industry has grown very rapidly. Allied industries which supply our industry have also contributed invaluable service, not only in new products and methods but in assisting in reduction of costs of certain operations. I do not know of any industry which has better facilities for the education and training of scientists in its particular field than the paper industry. This assures a continuance of scientific research and development so necessary to keep any industry in the forefront in its respective field.

There are many other basic reasons for the stability of this industry which I might mention. I think, however, you may be more interested, at the moment, in knowing what people think about their probable use of paper and paperboard products during 1949, as compared with last year.

In order to get first hand information which I might use in this talk and also to have the judgment of men on whom I rely for a sane appraisal of the business outlook in their own field, I have, within the last ten days, contacted a great many of them. The following comments are based on the information I have received from the best informed people in each of several industries using the products of this industry. Each comment represents my interpretation of their statements and their statements, in turn, represent the thinking of many people engaged in their respective fields. I do not know of a better way to get an up-to-the-minute appraisal of the requirements during 1949 of our products.

Probably the best informed source for an estimate of the consumption of newsprint and publication papers, generally, is the newspaper publishers and the advertising agencies and associations which use such papers. The EDITOR AND PUBLISHER on February third released the information that for the eighth consecutive year U. S. daily and Sunday newspaper circulation had reached a new high. Daily paper circulation was 1.2 per cent over 1947, while Sunday circulation was 2.7 per cent over the previous year. This relates to circulation only, and I am informed by the American Newspaper Publishers Association that the increase in consumption of newsprint was 12½ per cent in tonnage. The association states, also, that today the increase in newsprint capacity in North America over 1948 is five per cent, but a hurried high spot survey of estimated consumption among well informed publishers indicates a probable increased use of six per cent in tonnage.

The fact that one can buy a little spot tonnage of newsprint now at something less than the black market price effective early last year seems to have a very depressing effect on some writers and economic service editors. Now that you can go into a store and buy a shirt somewhere near the size and quality you want, does it mean that the textile industry has gone to pot?

Newsprint consumption depends on advertising lineage. If, as we have been taught, "advertising pays," then it is reasonable to suppose that there will be more square feet of newsprint employed in advertising if a more highly competitive situation exists in all industry. From all this I cannot find any reason to suppose that newsprint consumption will be less than in 1948 and may run from two to six per cent more.

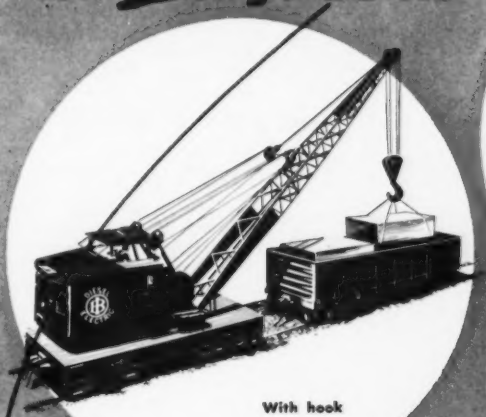
In my contact with the advertising field, I find some hesitancy about making predictions or hazarding guesses. In computing their figures they apparently deal with "dollars" and not "square feet of space," which is the thing the paper industry is interested in. They do call attention to the fact that advertising expenditures in 1939 were $1.8 billion, whereas in 1948 they were $4.2 billion. Some financial papers have stated that the postwar boom in advertising is slowing down. Those who are in intimate touch with the advertising business and who are in position to know about commitments for advertising are of the opinion that the business will continue during 1949 at the all time level established in 1948. My personal opinion is that if, as some people claim, volume of advertising has some relation to corporation income tax rates imposed by the Congress, then I see no possible chance of a let-up in advertising.

In the field of direct-by-mail advertising there is a distinct feeling that this year will run ten to eleven per cent greater in unit volume than last year.

In the whole advertising field there are two points which might be of interest to you (1) advertising costs on the average are fifty per cent higher than in 1941; (2) advertising volume has more than doubled, as compared with 1941. An advertiser who wants to get the same selling power today as in 1941 certainly has to spend more money to do it or, conversely, if he spends the

(Continued on page 108)

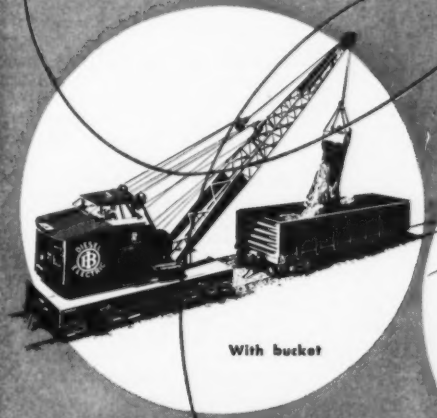
BROWNHOIST
let George do it!



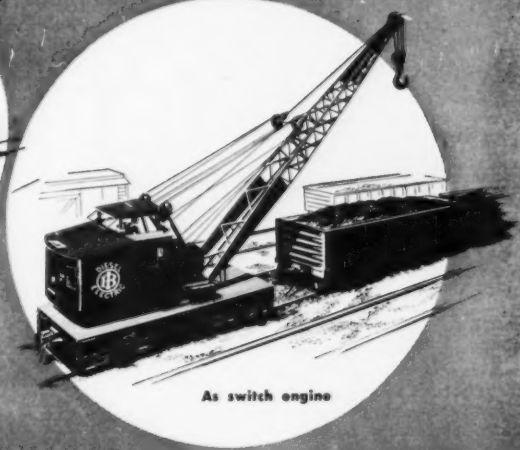
With hook

With magnet

"Let Brownhoist do it" has become the slogan in more and more industries where there's a tough materials handling job to do. The reason is simple. The new Industrial Brownhoist Diesel Electric Locomotive-Crane is a most versatile worker—it performs equally well as a switch engine or as a crane operating with magnet, hook or bucket. Standard models available to meet every capacity requirement. D.E.-30, D.E.-50, D.E.-60. Plan to reduce your material-handling costs, today, with a Brownhoist Diesel Electric Locomotive-Crane. Write for complete particulars.

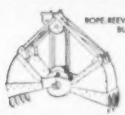


With bucket

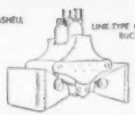


As switch engine

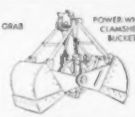
BROWNHOIST
builds better cranes



ROPE-REEVE CLAMSHELL BUCKET

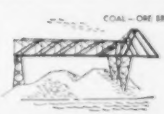


LINK-TYPE ORE GRAB BUCKET



POWER-WHEEL CLAMSHELL BUCKET

250 TON WRECKING CRANE



COAL-ORE BRIDGE

INDUSYRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN

DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago. **AGENCIES:** Detroit, Birmingham, Houston, Los Angeles, Portland, San Francisco, Seattle, Spokane. Canadian Brownhoist Ltd., Montreal, Quebec.

Cash Register Complex

(Continued from page 106)

same amount of money today as in 1941 he will get greatly reduced sales power.

The difficulty I see in this whole advertising effort is that there are too many people who still consider it an "expense." It is the first item they cut out of their budgets when they think a tight situation is in the offing or they have their advertising budgets geared to percentage of sales. Such reasoning is fallacious. When sales volume decreases then percentage of sales dollar allotted to advertising should be increased to insure more sales volume. Again, I say, if advertising pays—and I firmly believe it does, then in periods of highly competitive situations the paper industry should benefit, particularly in the publication and specialty paper fields.

I have dwelt at some length on the publication and advertising portion of our business but it is so related to all phases of the paper business and all other business that it deserves prime consideration in any discussion of our future outlook.

While magazine publishers, as a group, have hesitated about making any prediction as to consumption, it is evident from the comments made by the advertising people that the magazine lineage will hold up, although news stand sales may fall off. The policy of extended subscription covering two, three, and five years should protect magazine publishers against pricipitate drops in subscriptions if some dire calamity should overtake us. In connection with this whole field of publications and direct-by-mail advertising, there may be a tendency toward reduction of basis weights in order to offset increased postal rates for certain classifications. The extent of such reduction in weights translated into tons is impossible to determine. However, it cannot be too important a factor when you consider a figure of 3,114,000 tons of book and publication papers consumed by the printing industry last year.

In attempting to get information from the various agencies which have to do with the production of books of all kinds, the best I could get was replies indicating from slightly below 1948 consumption to about five per cent above. The replies do not contribute much to this study, but I know from the tone of the replies that the estimates are not based on wishful thinking. They are from persons who think their business may be hit by some decline in general business activity and are on the pessimistic side. Evidently producers of the better quality of books and publications think there will be a slightly less demand, whereas other producers believe they will have an increased demand of about five per cent.

Fine paper manufacturers are reticent about making any predictions about the relation between 1948 and 1949 tonnage consumption. There seems to be some divergence of opinion, but they all seem to agree on one point—that they are dependent on the domestic supply of high grade rags and that there will be no appreciable supply through importation, as people abroad are wearing their rags. I have attempted to secure information on the 1949 use of one of the important lines of fine papers. If the information I have from those familiar with the insurance business in all classes of coverage is correct, then there will be a demand for considerable quantities for the reprinting of policy forms to cover modifications made necessary by changes in state laws affecting insurance. Government demand for high grade papers for permanent records will increase.

In wrapping papers, especially those of good quality or which do a particular job from a functional standpoint, there is evidently a pent-up demand of at least five per cent over the same period last year, which should begin to show up in the second quarter of this year.

With all the talk there was last fall about the complete cessation of business in 1949 and the necessity for the liquidation of all inventories, it is no wonder that distribtuors and consumers were panicky about getting rid of and using up all the sub-standard merchandise they had accumulated over the past eight years. Housecleaning is sometimes a healthy pastime. Perhaps we may soon get back to standard grades as we once knew them. People may discontinue, for a while, buying the things which are not ordinarily wrapped in paper. These are the bulky items which represent considerable cash outlay, but the public will continue to buy essentials and it is the wrapping required for these products which is the backbone of the wrapping paper business.

In the grocery bag field I have made an independent survey of the situation and, as I see it, this segment of the industry has been short of satisfactory grades of paper to meet the demand for a number of years. This came about through diversion of standard grocery bag paper capacity to other grades, due to a price situation which upset the whole bag situation as it formerly existed. In my estimation there has been a shortage of fully fifty thousand tons of bags annually for several years. No one wants to use a secondhand bag or lug a market basket, but it has been and still is being done. Certainly the 1949 demand for grocery bag paper will not fall below the 1948 level.

In the multi-wall bag industry the demand is governed by requirements for packaging and shipping of agricultural and food commodities, building materials, chemicals, pigments, etc. With the larger population requiring food, the housing program which will be replaced by public works (if there is any let-up in private construction), the chemical production which is constantly increasing, and the new developments in the multi-wall sacks for the packaging of fruits, there is bound to be an increased demand above the 1948 level.

In toilet, towels, and napkins there is every indication of increased use for the year, although right now receipts of orders are below the same period last year. All of these items were in short supply during the past few years. Constantly increasing population and high rate of employment insures increasing demand for these products.

Having mentioned employment, I would like to digress for a moment to comment on how the news of any slight falling off in employment is treated by headline writers and commentators. I saw an article, recently, headed "10,000 join army unemployed." The reading article did not substantiate the "army" part of the headline. It was intended for headline readers. In another part of the paper one of the departments in Washington estimated there are now 2,600,000 unemployed, a slight increase over last July. How does this stack up with the end of 1939? At that time it was estimated there were 4,000,000 unemployed out of a population of 131,000,000. Today they point with horror at 2,600,000 unemployed out of a population of 148,000,00. What portion of the 2,600,00 now unemployed are floaters or people who will not work under any circumstances?

In the standard tissues for industrial and business uses we seem to have an active and increasing demand. Light weight, air mail, and other grades which may be the substitutes for heavier weights, due to increased postal costs, have a potential demand exceeding the 1948 level.

Absorbent and facial tissue production has been expanded considerably but the uses for which these grades were developed are all essential and economic. It is estimated that consumption for the year will exceed 1948 by five per cent.

Manufacturers of cups, containers, bottle caps, and drinking straws all estimate consumption equal to 1948. Some liquid tight container manufacturers, of the spiral-wound round can type, estimate a lower consumption of paper and paperboard. This may be accounted for by the change of design by some producers which throws this tonnage into a different classification.

(Continued on page 110)

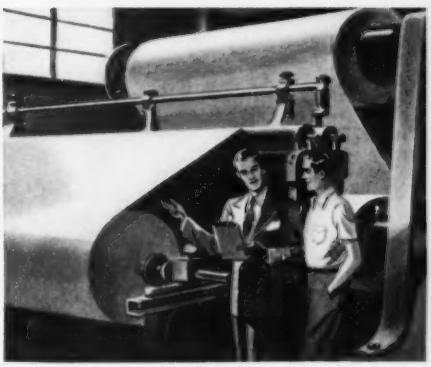
Paper Product Pointers
FROM CYANAMID

Re: Wider Markets for Paper...

Cyanamid's Technical Service Staff Helps Manufacturers Develop New Papers and Improve Quality of Their Products

Our Technical Service Staff is available to help manufacturers develop new papers through the proper application of Cyanamid chemical products. Present papers may be improved quality-wise and processes made more efficient through their experienced counsel.

If you have a "paper" problem, the services of the Technical Service Staff are at your call with no obligation. The specialized skill and experience of these paper chemical specialists, backed by our Stamford Research Laboratories, are as essential a component of our products as are the quality and uniformity inherent in every batch of Cyanamid paper chemicals.



Look us up at the TAPPI Meeting in New York in February. We will be glad to discuss your paper chemical problems with you.

ALWAX Sizes • WAXINE* Sizes • Rosin Size • PAREZ* Resins Synthetic Resins • Casein • Alum • Sulfonated Oils • Fillers Defoamers • Soda Ash • Caustic Soda • Salt Cake • Acids • Clays AEROSOL* Wetting Agents • CAL MICRO** (Calcium Carbonate) and other Paper Chemicals.**

**Reg. U. S. Pat. Off. **Trade-mark*

Sales Offices: Boston, Mass.; Philadelphia, Pa.; Pittsburgh, Pa.; Baltimore, Md.; Charlotte, N. C.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; Detroit, Mich.; Kalamazoo, Mich.; St. Louis, Mo.; Los Angeles, Calif.; San Francisco, Calif.; Seattle, Wash. In Canada: Dillons Chemical Co. Ltd., Montreal and Toronto.

AMERICAN Cyanamid COMPANY
INDUSTRIAL CHEMICALS DIVISION
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Cash Register Complex

(Continued from page 108)

One branch of the industry which is still in its infancy compared to the potential use of its product is the manufacture of paper milk bottles. This article has great possibilities and will require substantial tonnage of high grade paper or board.

Waxed paper, both printed and plain, is pretty well geared to population since it is practically all used in connection with food distribution. There is no reason to believe that manufacturers of this type of product will not require as much tonnage of raw paper as they did during 1948.

The use of paper in other miscellaneous products may vary somewhat in tonnage required, but some of these uses which are recent developments will probably increase their requirements materially, whereas some of the others may decline. Most of the people engaged in that end of the business are wide-awake and keen developers of new products. My opinion is that overall requirements of paper in the specialty business will increase.

The one big factor in this whole paper and paperboard situation, which has shown the greatest growth and still has the greatest opportunity for economic displacement of other types of materials and products, is the paperboard industry. In this I include the manufacturers of different grades of board and the allied manufacturers of corrugated and solid fibre containers, folding and set-up boxes, cans, tubes, drums, pails and special items. It is a tremendous business and the development of it has been on a strictly economic basis. There are no competitive products which can be used for the delivery of merchandise at as low a cost.

In 1939 the consumption of paperboard, including building boards, was 5,936,000 tons; in 1948 it was 10,863,000 tons. This increase of 4,927,000 tons is eighty-three per cent above the 1939 consumption in the paperboard and building board fields. During the same period the increased use of all papers was 7,940,000 tons, or fifty per cent above the 1939 consumption.

It is evident that during the past ten years the paperboard industry has made greater strides in developing uses for its products than has the paper industry. In my opinion, that branch of the industry has greater opportunity for a further increase in the use of its products tonnagewise than has the paper industry. The industry has spent a large sum of money in research and development within its own plants and has, through joint effort, financed a project of a building and equipment where it is carrying on further research and development work under the direction of the Institute of Paper Chemistry. Such individual and concerted efforts are bound to pay dividends.

Despite the fact that so far this year, consumption of paperboard has been less than the corresponding period last year, I am firmly of the opinion that total consumption for 1949 will run from four to six per cent above 1948.

In the consideration of this whole problem, there are two or three factors which may make it physically impossible to produce as much in 1949 as in 1948 and which will have a direct bearing on the consumption figures at the year end. These factors are the amount of tonnage taken out due to replacement and repair programs, the number of marginal mills which for one reason or another may be shut down permanently, and the possibility of discontinuing seven-day operations in some mills. Against such deficiency in production we must also consider new capacity coming into operation and increased production in established mills through rehabilitation and modernization of equipment. Weighing one against the other, I do not believe there will be any appreciable amount of variance in the producing capacity during 1949.

In June 1945, in a speech made at a meeting of the Chicago Professional Paper Group, I ventured a prediction as to probable consumption of all grades of woodpulp postwar. At that time I estimated 13,150,000 tons. In 1946 the actual consumption was 12,565,000 tons; in 1947 it was 13,872,000 tons, and in 1948 the figures, when finally adjusted, will show approximate 15,000,000 tons. In 1945 quite a few people questioned my estimate and thought my guesstimate was altogether too high. Actual performance shows that I was on the low side.

Waste paper consumption has also stepped up very materially, and the secondary materials' business has gotten back in shape to function better than ever, after being kicked around and hamstrung by bureaucratic regulations during the war period.

I do not want to leave the impression that I am trying to indicate a serious shortage in paper and paperboard, or to advocate the building of mills to meet an extraordinary demand, or to do any other thing which would have the effect of a "shot in the arm" to bolster up the paper and board business. I am merely trying to do a reporting job on the situation as I see it and to emphasize my belief that overall volume will be maintained at or above the 1948 level.

In asking the opinion of people from whom I inquired, relative to 1949 volume, there is one factor which I purposely avoided. That factor is the possible increase in expenditures covering the military training program and material purchases for all branches of the armed forces. I have not inquired as to what effect such action might have on any informant's estimates nor if they think such a thing is impending and the extent of such a national expenditure.

I am not a warmonger! With nine grandchildren, five of whom are boys, the Lord knows that I am not pleased with any situation which tends toward war. I think I am capable of sustaining my business without it. As a reporter, however, I feel I should express my opinion as to what I think is in the making. You have all read for months of the activities of the Munitions Board and of the National Security Resources Board. Perhaps you have paid no attention to the newspaper articles which have come out of Washington but, if you have, you cannot say that you have not been alerted to the possible effect of the impending program. I have no definite information on what is to be done or when we may expect a repetition of the action taken in 1940 and 1941, prior to the memorable December seventh. Common sense tells me, however, that our involvement in the international situation is far greater than it was then and that the territory to be covered is even greater than before. I also know from bitter experience that you can't play poker all night on a pair of deuces.

The settlement of the peace has become more complex than the ending of the war. We may never have another war but, in my opinion, we must make preparation not only for defending ourselves in case of war, but in carrying on a sure-fire offensive campaign if war occurs. You do this in your own business and this country is only a combination of all businesses plus a horde of "innocent bystanders."

If we have a repetition of the 1940-41 period of preparation and if more people are taken into the training program, the biggest headache we will encounter is a manpower shortage.

Anyone who has had any occasion to purchase metals in any form knows the difficulties experienced in getting deliveries. Newspaper reports indicate that stockpiling has let up a bit but will be resumed on April first, as soon as further appropriations are available.

In 1940 we were all worried about superimposing military demands upon civilian demands but, if you will recall, this was taken care of rather well by eliminating some of the civilian requirements.

I have merely interjected this possible contingency to arouse your thinking as to what we may be confronted with during the year.

Reviewing the whole situation and despite the gloom which seems to hover over this part of the country, I am still of the belief that when this year is ended we will find that, so far as "units" are concerned in practically every line of business, the 1949 consumption will equal or exceed that of 1948.

This folder can save you *MONEY!*

...Write for it Today!

Heppenstall Company—makers of the first successful solid alloy steel chipper knife—again sets the pace in knife design. We now introduce *standard slot dimensions* for chipper knives!

Careful research has established the practicability of this development. And its economy is evident. By standardizing chipper knife slot dimensions, costly engineering and manufacturing operations can be eliminated.

These standard slot dimensions can be used throughout the industry . . . chipper knife operations will be unchanged . . . you can use the same disk. Purchasing will be easier . . . *deliveries improved* . . . your chipper knife inventories will be reduced. Naturally, you can still depend upon the same steel analyses, heat treatment, and long service life that have made Heppenstall E.I.S. Chipper Knives the standard of quality.

HEPPENSTALL COMPANY
4620 Hatfield Street, Pittsburgh 1, Pa.

Annual Review, Pulp and Paper

February, 1949

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Economic Review

While the year 1948 recorded an all-time peak output of wood pulp, paper and board, it also probably marked the end of the sharply upward cycle in output achieved since the end of the war, provided the consensus of trade forecasts of anticipated business conditions for 1949 materializes. Already January, according to Association data, shown a lower ratio of production to capacity than any identical month since 1945; this, of course, is accountable in part to the greatly increased production capacity built in the past 3 years with still more facilities under way; and partly to the apparent leveling in the sharply upward demand wave since 1945 which showed signs of flattening grade by grade during 1948. January this year, with a lower tonnage output than in January 1948, may prove to be a "lull month" during the current readjustment period.

It is likely that for the year 1949 the industry will produce a volume approximating 1948, according to most trade observers. By prewar standards of comparison, this would be considered an excellent level of production either in terms of volume or ratio of output to capacity. On the other hand, should the 1949 market exceed present trade estimates, even more paper and board could be readily produced with current and nearly completed capacity.

In less than a decade, the value of sales of the industry has increased by over 4 billion. Estimated 1948 dollars sales of pulp, paper, board and products manufacturing industry were $6.1 billion as against $1.8 billion in 1939; $3.6 billion in 1945; and $5.7 billion in 1947.

Not only is the industry of vast importance in the domestic economy but it is also a leading factor in the foreign trade of the United States. As an importer of pulpwood, wood pulp, newsprint and to a lesser extent other classes of paper, board and products it accounted for $753 million of the dollar exchange in 1948 available to several other countries of the world for the purchase of United States goods and services. In the same year the industry exported products valued at $137 million to approximately 100 foreign countries. The significance of the industry's contribution to international trade, particularly the great increase in dollar value of imports, is disclosed by the accompanying figures.

The domestic pulp, paper, board and products manufacturing industry is of growing importance to United States production workers. As a direct employer of labor the industry as a whole accounted for an average of approximately 394,000 workers in 1948, paying total annual wages of $1,063 million. Besides, the industry contributes greatly, either directly or indirectly, to the employment of labor in logging, trucking, railroad transportation, inland waterway and ocean shipping, wholesale paper distribution, and in various other fields such as the production of raw materials and equipment in the form of coal, oil, chemicals, and machinery.

Total Value of Sales of the Pulp, Paper, Board and Products Manufacturing Industry

Year	Millions of Dollars
1939	1,785
1940	2,064
1941	2,836
1942	2,928
1943	3,325
1944	3,530
1945	3,623
1946	4,334
1947	5,664
1948[1]	6,107

[1] Preliminary.

Source: Prepared by Pulp and Paper Section, Forest Products Division, Office of Domestic Commerce, from data supplied by Business Structure Division, U. S. Department of Commerce.

Annual Value of Sales U. S. Wholesale Distributors of Paper and Its Products 1939-48

Year	Millions of Dollars
1939	575
1940	616
1941	827
1942	839
1943	910
1944	928
1945	944
1946	1,318
1947	1,552
1948[1]	1,507

[1] Preliminary.

Source: Prepared by Pulp and Paper Section, Forest Products Division, Office of Domestic Commerce, from data supplied by Business Structure Division, U. S. Department of Commerce.

In terms of physical output the industry discloses a remarkable record, particularly since the end of World War II. To produce a total of slightly over 22 million tons of paper and board in 1948 the industry consumed 14,375,000 tons of wood pulp, 7,585,000 tons of waste paper and 1,451,000 tons of other fibrous materials. Of the total wood pulp consumed in paper and board manufacture approximately 1,932,000 tons were imported.

The domestic wood pulp industry produced in 1948 about 12,872,000 tons of pulp which required 21,189,000 cords of pulpwood. Of total domestic pulp output the bulk went to United States paper and board manufacturers and to nonpaper producers such as rayon and plastics, with only 83,000 tons being exported. Total wood pulp imports in 1948 were about 2,176,000 tons of which Canada supplied 1,601,000 tons, Sweden 385,000 tons and Finland 176,000 tons, with the balance from other countries.

On the import side, in addition to wood pulp, the United States imported 2,244,000 cords of pulpwood and 4,395,000 tons of newsprint, principally from Canada. Imports of other grades of paper, board, and products amounted to about 186,000 tons. On the export side, besides pulp, the United States shipped to various foreiga countries in 1948 about 295,000 tons of paper and board and 102,000 tons of paper products. It is obvious that either in terms of value or quantity, imports of the industry range many times greater than exports.

Comparing the industry's position in 1948 with 1939 discloses many startling percentage gains. For example, the value of manufacturers' sales of pulp, paper, board and products increased 240 percent since 1939. In terms of volume measurement the following comparisons were noted. In the case of papermaking raw materials, pulpwood consumption increased 96 percent over 1939. Wood pulp production shows an outstanding increase of 84 percent over 1939 while imports remained constant, and consumption was up 66 percent. Paper and board production likewise shows some remarkable production gains, being 63 percent greater than in 1939; board increased about 80 percent and paper 50 percent.

The value of sales of wholesale paper distributors did not increase percentage-wise as much as the value of the manufacturers' sales. Wholesale sales in 1948 show an increase of 162 percent over 1939; manufacturers' gained 240 percent. This comparison probably reflects the large gains made in the use of boards for boxes, the big increases in the use of paper by large printers and publishers, and in other fields where the paper or board does

not flow through the wholesale distributor.

When considering the physical production of paper, board and pulp in connection with employment of production workers it seems obvious that productivity has increased materially. This is largely the result of new advanced pulp and paper making machinery and equipment which allows for more efficient and faster output. To illustrate, an increase from 1939 to 1948 of 49 percent in the number of production workers compares to an increase in the production of wood pulp of 84 percent and of paper and board of 63 percent. In referring to these ratios it should be borne in mind that the data are not strictly comparable because the number of workers includes those employed in converting plants as well as primary pulp, paper and board mills.

As the industry enters 1949, the outlook is definitely favorable for a sustained level of production of all the products of the industry. In general, most paper and paper products manufacturers and distributors foresee a steady market for their products assuming there is no substantial diminution in the level of over-all economic activity. There is, however, evidence of normal peacetime competition in terms of quality, prices, service, and related factors which go to make up a healthy state of American business enterprise. This should bring forth in 1949 considerable adjustments in grade output by various mills, with some switching back to customary items on one hand and a striving to develop new items to meet new markets on the other; these and other developments will probably witness further price adjustments which became particularly evident in January 1949, according to trade reports from Commerce Department Field Offices in various sections of the country; service in its various aspects will become even more important; "concessions" in the form of better freight allowances, increased discount rates and discount periods; and other ways and means of getting orders are also reported by the trade in some segments of the manufacturing and distributing industry.

RAW MATERIALS

Pulpwood

Receipts of pulpwood in 1948 reached a volume never before achieved in the history of the domestic pulp and paper industry. According to preliminary figures, 22,339,000 cords were received at mills throughout the country. This exceeded the 1947 total by a margin approaching 1.7 million cords, or 8 percent. Consumption, too, soared to new heights for the year with mills converting 21,189,000 cords, a gain of nearly 1.5 million cords over the 1947 total. Notwithstanding the vast quantity of wood that was transformed into pulp, the end of 1948 wood pile at the Nations' mills had increased over its stock position at the beginning of the year by more than a million cords.

Production Workers and Wages
Pulp, Paper and Allied Products Industries

Year	Average number of wage earners (Thousands)	Total dollar wages (Millions)
1899	94	36
1909	145	68
1919	208	213
1929	233	287
1939	265	310
1947	391	953
1948	394	1,063

Source: Bureau of Labor Statistics, U. S. Department of Labor.

There was, in fact, no serious lack of pulpwood during the year with a few regional exceptions. In the South, some mills experienced temporary shortages in the early spring as pulpwood movement had been hindered by the winter's prolonged and excessive rainfall. A temporary scarcity also was noted during midsummer in the area of the Great Lakes, due to declines in imports—particularly of spruce-stemming from the restrictive Ontario export policy put forth in 1947. Flood waters and relatively minor labor disturbances in the Pacific Northwest in May and June had their effect in retarding local pulpwood transportation. Irrespective of these deterrents, each of the affected areas was able to accumulate generally adequate stores of pulpwood and the country's total on December 31, 1948 was substantially above inventories at the end of any previous year. Stocks in the South made an outstanding gain of 185 percent during the year. Even in the Lake States, an increase in domestic wood receipts more than offset a loss of 12 percent in imports, and resulted in a net over-all gain of nearly 200,000 cords. The year's end found many mills with surplus wood, and some that had discontinued purchases during the final quarter. Excessive stocks of wood were also reported in portions of the Pacific Northwest during the last weeks of 1948, with a consequent slowing down of pulpwood logging operations. Inventory gains in similar proportion to that in the Great Lakes region were effected in the other pulpwood areas of the country.

Pulpwood imports from Canada, in 1948, though nearly 9 percent over the 1947 total, comprised a slightly smaller proportion of total domestic mill receipts in the year just ended. Receipts of imported pulp in the Pacific Northwest increased 45 percent in a comparison of the same two years while those in the Northeast gained nearly 18 percent. Early in 1948, the British Columbia export quota of pulping logs to the United States was raised from 50 million to 100 million board feet. The 1948 allocation to this country from eastern Canada was set originally at 1,310,000 cords, and followed by a supplementary quota of 850,000 cords. The total allocated from eastern Canada was 300,000 cords above the 1947 quota. Though not comparable to total imports, mill receipts of imported pulpwood in the Pacific Northwest for 1948 amounted to about 93 percent of the British Columbia quota, while total receipts of Canadian wood in the other importing areas of the country were approximately 90 percent of the allocation from eastern Canada.

Total U. S. Imports-Exports
Paper Base Stocks
Paper
and
Manufactures
(In millions of dollars)

Year	Imports	Exports
1939	215	40
1945	298	102
1946	419	116
1947	657	173
1948[1]	753	137

[1] Preliminary.

Source: Bureau of the Census, U. S. Department of Commerce.

Prices of pulpwood, after a consistent and prolonged rise during the post-OPA period, culminating around mid-year 1948, softened moderately during the latter months of 1948, especially in the Great Lakes and Pacific Northwest, as a result of the easement in supply above mentioned. Some lowering of prices for market wood was also reported from Canada. The extent of the rise is apparent from a scrutiny of import valuations in former years which reveals an average price per cord of $12.22 in 1944, $16.67 in 1947, and $18.80 in the middle months of 1948. Domestic pulpwood prices, based on Census data for the three prewar years 1937-39, averaged $11.53 for spruce, $5.36 for yellow pine, and $7.96 over-all. Although official domestic prices for 1948 are not available, unofficial quotations indicate an increase in the neighborhood of 100 percent over the above prewar figures, an advance closely approximating the upswing in the composite prices of pulp, paper and board for the same period.

Woods labor during the year just past has been generally sufficient for pulpwood cutting and transportation. Apart from the temporarily disruptive boom-men's strike in the Northwest, labor and management have maintained a generally harmonious relationship. Wage adjustments where executed during the year have followed an upward trend, an addition to industry costs that has been reflected in rising pulpwood prices and in a stimulated interest by pulp and paper mills in the utilization of mechanical logging equipment which came into more adequate supply as the year progressed.

The year 1948 witnessed an intensification of salvage logging, especially in the Northwest, and further developments in the pulping of wood waste. The year also saw increased acreage of timber holdings acquired by the Nation's pulp and paper companies with the assurance that these additional con-

(Continued on page 114)

Annual Review—Neubreech

(Continued from page 113)

trolled sources of pulpwood will benefit from the industry's increasing concentration on improved forestry techniques and mechanization. These trends toward a more intensive use of forest products by the pulp and paper industry, in addition to the plenitude of logging labor, the casing of pulpwood costs, and the ample supplies of wood available at the year's end combine to create an outlook for the industry's chief raw material that, for the intermediate future at least, is regarded as highly satisfactory.

Waste Paper

Waste paper was the only major fibrous material which showed a marked decline in consumption during 1948. Consumption in 1948, though second only to that of the preceding year, and greater by 70 percent than prewar levels, revealed a consistently lower month by month trend as compared with 1947. December, in fact, showed less waste paper utilized by the industry than in any month since July 1946. Although mill inventories of waste paper on December 31, 1948, were slightly less than on the same date of 1947, the close of 1948 found packers' warehouses in some important metropolitan areas, especially that of New York City, filled to the bursting point.

Prices of waste paper, with the exception of the news grades, ended 1948 at or near the year's low point. The recession carried the higher priced grades such as cuttings and shavings down to figures from 35 percent to 50 percent below those prevailing at the beginning of the year. The news categories, both folded and over-issue, while finishing the year with a modest upswing of some 6 percent over minimum quotations of midyear 1948, were somewhat less than those at the year's beginning. Mixed papers, however—comprising about 1/3 of total waste paper consumption—ended 1948 at prices that were some 45 percent below those at the year's start. These low prices represented an uneconomic level and the trade has been faced with an anomalous situation in which excess supplies have weighed heavily against a declining demand.

Measures designed to alleviate the stress have included such drastic expedients as the burning and dumping of a large portion of the superabundant volume of waste that has continued to become available. Means of decelerating the collection machinery without putting it completely out of commission also have received serious consideration. Partial relief has been sought from financial strain by endeavoring to have the owners of buildings and the managers of stores compensate dealers for the removal of waste paper instead of requiring payment for this service as heretofore. Even this change of procedure, where accepted by the buildings and stores, will not adequately compensate many dealers for the cost of collections for the reason that the prices of the higher grades, from which dealers expect to realize the bulk of their profits, have been too low recently to carry the entire salvage operation.

The top-heavy position of waste paper since the latter part of 1948 has been attributable to several factors. On the supply side, the abnormal mildness of the fall and early winter, despite declining prices and progressive slackening in the activities of peddlers and other collection personnel, produced a capacity accumulation of the lower grades in the hands of dealers and packers. From the consumption standpoint, several influences have worked toward a lower volume. Folding boxboard production which uses approximately 27 percent of all waste paper consumed, declined nearly 100,000 tons in 1948 below the 1947 output. This decrease in the output of folding boxboard could account for as much as 85,000 tons of the year's decrease in waste paper consumption. In the liner board field, also a major consumer of waste, there was a definite trend during 1948 away from the so-called "jute" categories toward the higher quality kraft boards which use mostly virgin wood pulp.

This increasing accent on wood pulp has been furthered by its availability at lower prices, and has affected not only those products using the bulky grades of waste paper but also many of those items consuming the higher, or so-called pulp substitute, grades. In consequence, waste paper in 1948 represented a moderately less proportion (32 percent) of all fibrous materials converted into paper and board than in either of the two previous years, in which it averaged 35 percent of the total.

Apart from focusing attention upon the urgent need for greater stability and standardization in the business of salvaging waste paper, the only real benefit from the present impasse that can be readily discerned is a reported improvement in grading and in the general quality of waste paper packs.

That the waste paper industry is determined to deal constructively with its current difficulties and its perennial problems is apparent from the comprehensive program of its national committee. While the future prosperity of the waste paper industry will unquestionably follow the forthcoming production trends of paper and, more especially, of paperboard, an early implementation of the committee's program will no doubt go a long way toward offsetting periodic fluctuations in the waste paper market and will tend to assure the mills a dependable flow of waste paper, of desired specifications.

Manufactures—Paper and Board

Total paper and board production in the United States in 1948 exceeded 22 million tons, surpassing 1947 production by close to 1 million tons, or by 4.5 percent. Production of paper showed a relatively larger increase than board—5 percent for the former against 3 percent for the latter. The aggregate capacity of the industry was increased materially during 1947 through the installation of new machines and improvements and rebuilding of old ones, and this program continued through 1948.

Integrated paper mills for the most part operated at near capacity throughout the year. A few mills shut down during the slack summer season for installation of new machinery or rebuilding and repairs to old ones. Obtaining adequate supplies of raw materials, coal, and labor did not present any very serious problems in 1948. It was still difficult to obtain machinery or equipment as promptly as desired and a few chemicals remained in tight supply. The nonintegrated, or pulp-purchasing, mills for the most part were in a less happy situation. Market pulp was somewhat tight in the earlier months of the year although supplies became adequate as the year advanced. Their chief problem was, and still is, to obtain market pulp at prices which will permit them to compete profitably with the integrated plants. A number of the non-integrated mills in the northeastern and Lake States regions reduced their number of days per week operations because of inability to pay the high prices asked for imported market pulp in an increasingly competitive paper market. A few marginal paper and board mills in the nonintegrated group closed down because high production costs placed them in a noncompetitive position with the integrated mills.

The outstanding development in the paper and board industry and trade in 1948 was the shift from a seller's to a buyer's market. Whereas in 1947 and immediately preceding years the mills received more orders than they could fill and were forced to allocate their output among their various customers, before the end of summer in 1948 the huge backlog of orders had been liquidated and the mills were actively competing for new business. Two diverse factors contributed to this change. The continuous sharply upward trend in paper consumption which had marked the postwar years was arrested during 1948. Paper consumption continued on high level, but the almost steady rise from month to month ceased. However, production continued near to capacity, or even better in some lines, and as a consequence supply moved into a better balance with requirements. Consumers and distributors soon were not only able to secure sufficient paper to meet current needs but were able to build up well balanced inventories. However, the need to build up these inventories kept orders high at the mills for some months. By the end of June the heavy backlog of orders for many grades at the mills had been reduced to a level that enabled

(Continued on page 122)

OVER THE YEARS

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Tappi Reflects Industry's 1948 Progress

By R. G. MACDONALD

Secretary-Treasurer—Technical Association of the Pulp and Paper Industry

The Technical Association of the Pulp and Paper Industry, reflecting the times, had an exceedingly successful year in 1948. The membership continued to grow at a rapid rate and several productive conventions were held. The work of the divisions and committees was very good in spite of the tremendous pressure of work on the committee chairmen and members by their companies during a record-breaking new construction and mill improvement year.

Membership

There were 424 individual members elected in 1948, 134 members resigned or were dropped. On December 31, 1948, the total individual membership was 3,557.

There were eight corporate and 14 sustaining members elected. Eight corporate and four sustaining members resigned. The corporate membership on December 31, 1948 was 205, and the sustaining membership was 176.

The following companies became *corporate members* in 1948: Bartgis Bros. Co., Ilchester, Md.; Cartiers F. A. Marsoni, Venezia, Italy; Fibreboard Products, Inc., Antioch, Calif.; Fleming & Sons, Inc., 1120 E. Clarendon, Dallas, Tex.; National Waterproof Papers, Inc., Camden, N. J.; Societe Landaise Des Cellulose, Tartas, Landes, France; Star Paper Mills Ltd. (England); and Star Paper Mills Ltd., (India).

The following companies became *sustaining members* in 1948: Askania Regulator Co., Chicago; Ciba Co. Inc., New York City; Drackett Co., Cincinnati; Farrel-Birmingham Co. Inc., Ansonia, Conn.; General Electric Co., Schenectady, N. Y.; Georgia Kaolin Co., Elizabeth, N. J.; Hardinge Co., Inc., York, Pa.; Jackson & Church Co., Saginaw, Mich.; Kelco Co., Chicago; Lockport Felt Co., Newfane, N. Y.; Newport News Shipbuilding & Dry Dock Co., Newport News, Va.; Riley Stoker Corp., Worcester, Mass.; Rohm & Haas Co., Resinous Products Div., Philadelphia, Pa.; and Virginia Smelting Co., West Norfolk, Va.

Necrology

The Association lost through death the following members: G. K. Bergman, A/B Centrallaboratorium-Keskuslaboratorio OY; Mark W. Bray, U. S. Forest Products Laboratory; Paul de-Costa Bray, University of Maine; Richard H. Dempsey, Rising Paper Co.; Thomas C. Finch, Alliance Paper Co. Ltd.; Charles E. Foley, Nashua Gummed & Coated Paper Co.; A. B. Hansen, Northern Paper Mills; George H. Harvey, Gardner-Richardson Co.; Bjarne Johnsen, Hammermill Paper Co.; Lester Kirschbraun, Flintkote Co.; F. P. Klund, Hammermill Paper Co.; George W. Mabee, National Folding Box Co.; Ralph B. Roe, Sorg Paper Co.; Carl C. Schneider, Hawthorne Paper Co.; N. L. Shamroy, Rust Engineering Co.; and John Stadler, Consulting Engineer.

R. G. MACDONALD

Special Reports on Manufacturing Problems

As a year-around service the Association makes a number of surveys. Some of these deal with information needed by committees, but even more relate to problems of pulp and paper manufacturers who find occasion to check their own operating practices by finding out how similar practices are conducted by other companies in the industry. This so-called Service to Members Plan was initiated in 1921 at a time when there was but little published information on routine operations. In more recent years these problems have become more limited and specific since the more general routines have been published in the text books on Pulp and Paper Manufacture. The Special Reports issued by the Association in 1948 were: No. 374 Groundwood Mill Equipment Survey II; No. 375 Process Water Used in the Manufacture of Alkaline Pulps; No. 376 Conditioning Cylinder Machine Felts and Wires; No. 377 Broke in the Manufacture of Book Paper; No. 378 Casein Substitutes; No. 379 Casein; No. 380 Use of Fadeometers; No. 381 Pulp Sampling at the Blowpit; No. 382 Groundwood Mill Equipment Survey III; No. 383 Groundwood Mill Equipment Survey IV; No. 384 Use of Weightometers for Wood Chip; and No. 385 Use of Alum Solutions.

Employment

Although a large number of members found new employment through the assistance of the Association there was neither a great surplus of jobs open or men available. In 1947 there were many more jobs open than there were men to fill them. The slack was apparently taken up by the growing availability of men who were in the Armed Services and, after a brief refresher course in technical schools entered the industry in their old jobs or as newcomers. The large number of the latter was evident in the attendance at national and sectional meetings. The desire of the Association to assist in taking care of employment needs should be kept in mind. This applies in particular to paper mill superintendents, engineers, technically trained men and even mill operating managers, as well as sales engineers for the machinery and commodity industries. The Association does not require any fees for performing these very important services.

Fall Meetings

Beginning in August the Association conducted six fall meetings, all of a functional nature. The attendance at all of them was satisfactory, and was composed almost entirely of individuals who had a vital and primary interest in the purposes of those meetings. The social aspects of the meetings were kept at a minimum and, in fact, did not exist in the form of dinners, entertainment, etc., at two of them. The serious aspect of the programs may have had some influence relative to the large proportion of individuals who were sent by their companies to attend the meetings. The attendance in general was somewhat higher than in 1947, not counting the exceptionally high one-day attendance at the Philadelphia meeting when a very large group attended as guests of the Pusey & Jones Corporation.

Plastics Conference

On August 16-17, the TAPPI Plastics Committee sponsored a meeting at the Institute of Paper Chemistry at Appleton, Wis. E. C. Jahn of the New York State College of Forestry was general chairman. He was assisted by Herman Mark of the Polytechnic Institute of Brooklyn who led a symposium on "Resins to Fiber Bond" and by J. C. Pullman of the American Cyanamid Company who conducted a panel on "Plastics in Paper Converting." About 230 attended compared with 100 in 1947.

(Continued on page 118)

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Fundamental Research Meeting

Because of the college recess period several meetings were held in August to accommodate university professors from all parts of the country who could most conveniently attend at that time. In August these meetings began with the Lignin Round Table conducted by the Institute of Paper Chemistry at Appleton. It was followed by a meeting of the Wood Chemistry Committee of the U.N.F.A.O. meeting near Cleveland, Wis., the TAPPI Plastics Conference, and on August 18-20 by the TAPPI Fundamental Research Meeting at the University of Wisconsin and the Forest Products Laboratory, Madison, Wis. Harry F. Lewis of the Institute of Paper Chemistry was general chairman. The program which was devoted to the theme "The Physical Properties of the Components of Wood" was directed by Alfred J. Stamm of the Forest Products Laboratory. About 160 attended.

Mechanical Pulping Conference

On September 27-29, a meeting taking on the proportions of an old time TAPPI fall meeting was held at Poland Spring, Maine. This meeting was devoted to the Mechanical Pulping Process and was jointly sponsored by the Technical Section of the Canadian Pulp and Paper Association and TAPPI. John L. Parsons of the Hollingsworth & Whitney Company was general chairman and assisted by G. F. Witty of the Canada Paper Company, and R. M. Drummond of the International Paper Company. At this meeting the status of all phases of groundwood manufacture was reviewed. About 300 attended.

Testing Conference

The TAPPI Testing Division sponsored an important conference at the Mellon Institute, Pittsburgh, Pa., on October 11-14. This was an all-work meeting during which the current problems relating to the TAPPI Standards was considered. James d'A. Clark was general chairman and about 120 attended. Although the problems considered were difficult and controversial, it was felt that the meeting served a much needed purpose in breaking the "log-jam" that had developed regarding these methods because of the inadequacy of correspondence between committee members in dealing with them. Since these problems will undoubtedly get progressively more difficult there will be further need for such get-togethers to consider the technical aspects of them.

Third Engineering Conference

The series of fall meetings was completed on October 25-28 at Buffalo, N. Y., with the Third Engineering Conference of the Pulp and Paper Industry. This meeting which has become one of the most outstanding events of the year in the industry was considered by many to be the best held to date was attended by about 360 engineers and was sponsored by the Westinghouse Electric Company. J. W. Hemphill of the Johns-Manville Company was general chairman. Plant visits were made to the Westinghouse, Lockport Felt Company and Upson Company plants.

Publications

Although the publication practice of the Association followed the pattern of recent years definite plans were made to change some of these, beginning in 1949.

Technical Association Papers

Series 31 of Technical Association Papers will be the last volume to be printed. It will be superseded in 1949 by a monthly technical magazine. Since 1921 the meeting papers of the Association were published in the PAPER TRADE JOURNAL, a weekly magazine owned by the Lockwood Trade Journal Company. At the end of each year these papers were collated and printed, together with considerable additional material in a cloth-bound volume called Technical Association Papers. Series 31 will contain 820 pages.

The establishment of the new magazine to be called *Tappi* and the discontinuation of the use of space in the *Paper Trade Journal* was decided upon after discussions of the subject over several years. The former arrangement was mutually advantageous, but there was a growing feeling that the Association could serve its members and the pulp, paper and paperboard industries better by issuing its own magazine. The possibilities of performing a superior service appear to be very good and the times excellent for undertaking such an ambitious venture. The present secretary, who worked closely with the *Paper Trade Journal* since 1927, would like to express his appreciation of the courteous cooperation that he received over the past two decades from Messrs. George S. Macdonald, Henry J. Berger, and A. A. Tanyane of the *Journal* staff, who have died in the interim. They, together with Messrs. George E. Lockwood, Arthur E. Gordon, Fred B. Grosse and other members of the *Journal* staff, greatly aided the secretary in an important part of Association publication work.

Bibliography of Paper Making

Continuing his fine work as chairman of the TAPPI Bibliography Committee, C. J. West of the Institute of Paper Chemistry prepared a Bibliography of Paper Making and List of U. S. Patents covering 1947. These bibliographies published by the Association cover the technical literature of the industry since 1900.

TAPPI Standards

Twenty-one standard testing methods were issued in loose-leaf form during 1948. Others prepared in 1948 will be issued early in 1949. It is unlikely that these standards will continue to be issued at the same rate as in preceding years. The methods that are now under consideration demand much more effort in their preparation than those that were issued earlier. The Testing Conference already referred to illustrates the enhanced need for discussion.

It is doubtful if many members realize the amount of spade-work necessary to bring a method to the tentative standard status. Frequently, several years are required to process a single method. The need for a method has to be determined, then follows a number of approaches to the means of measuring a property, then there is the long period of experimentation and the establishment of reliability factors. There are many prospective methods in the dockets, most of which are not, at present, qualified to assume a "suggested method" status.

The need for some kinds of methods for evaluating products in process led to a round up of so-called routine control methods. A large number of these have been collected and are at present being edited by R. C. Griffin, chairman of the TAPPI Standards Committee. These will be released soon in a form that will be useful but will not be confused with the more firmly established TAPPI Standards.

TAPPI Data Sheets

No data sheets were issued in 1948 although several were prepared. These will be issued early in 1949. The early success of the C.P.P.A. Technical Section in preparing engineering data sheets led to the establishment of a similar service by the Technical Association. Behind the project was the recognition that every engineer accumulates files of basic material that he expects to find useful at some time, if not the present. The Association felt that it could contribute to this practice by acting as a clearing house to receive and publish valuable material in condensed and useable form. However, very little material has ever been received from members. The present contents of the TAPPI Data Sheets represents selections made by members of the Association headquarters staff.

Recently, the TAPPI Engineering Division has had occasion to consider the merits of this service and plans are under way by the Division to revitalize this service and to make many new sheets available to the industry. A Data Sheets Committee is in the making and with this new vital force behind this project the original aim should approach attainment. An ultimate objective of this work should be an Engineering Handbook for Pulp and Paper Manufacture.

TAPPI Bulletin

One of the victims of the Association's new publishing policy was the termination of the TAPPI Bulletin. This publication was started as a war-

(Continued on page 120)

HUBBARD

REINFORCED ALUMINUM CORES

Light Weight

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Now Hubbard brings you paper cores of special Reynolds alloy aluminum—the airplane light, battle tough metal. Think of what you'll save on freight alone—with a Hubbard aluminum core weighing only 35 lbs. as against 85 for an iron core for a similar sized paper roll!

The light weight means easier handling, too. Only one man needed for the empty cores.

And aluminum has other advantages that pay off. The tubes, reinforced with steel end inserts are dimensionally stable. No warping or twisting. Paper feeds out true all the way to the end . . . and paper *can* be used right down to the core. No danger of tubes cracking or collapsing in shipment—they're tough.

Hubbard Aluminum Cores are now available in 4", 5", and 6⅝" O.D. sizes. For full particulars, contact

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Hubbard

SINCE 1912 . . . .SPECIALISTS IN SPOOL AND REEL DESIGN AND MANUFACTURE

TAPPI Reflects Progress

(Continued from page 118)

time service and performed its job valiantly. Its ghost will be visible in the Association's new magazine. Ninety issues were published since 1942 and although it cannot be credited with winning the war it did much to coordinate the efforts of the industry and its grandchild, the packaging industry in helping to do so.

Monographs

Two monographs were issued in 1948.

Monograph No. 6 "Nature of the Chemical Components of Wood" was sponsored by the TAPPI Fundamental Research Committee and consists of the presentations made at the Appleton Conference in 1947 which was organized, in part, to provide the material for this book. To Harry F. Lewis, and his colleagues the Association owes a debt of appreciation for bringing this masterpiece of technical literature to fruition.

Monograph No. 7 "Pigments for Paper Coating" was prepared by the Subcommittee on Pigments, of which William R. Willets of the Titanium Pigment Company is chairman. This is one in a series of monographs being prepared by the TAPPI Coating Committee, Werner Kaufmann, Kupfer Bros. Company, chairman. They represent a tremendous amount of voluntary effort on the part of a large number of individuals. They are recognized as authoritative and are remarkable in that they have added to the industry's literature a large portion of the so-called secrets of a branch of the industry. If the secrets had not been generally known by the various companies there might have been some hesitancy in publishing them since it is the practice of the Association to only publish information that is not contributed to it for the general welfare of the industry.

TAPPI Medal Award

The 1948 TAPPI Medal was awarded to Dr. Emil Heuser, now of Downey, Calif. for his outstanding contribution to the advancement of the pulp and paper industry through his studies and reports dealing with funamental cellulose chemistry.

Local Sections

No new local sections were established during 1948 although the Empire State Section established a branch in June known as the Metropolitan Group which meets monthly in New York City at the famous Fraunces Tavern. The Pacific Section again sponsored an outstanding seminar on fundamental wood chemistry, during which Dr. and Mrs. Holger Erdtman of Stockholm, Sweden, lectured. The Maine-New Hampshire Section sponsored the Mechanical Pulping Conference of TAPPI and the C.P.P.A. Technical Section at Poland Spring, Maine. All sections returned to the normal schedule of meetings and had successful seasons.

Chairmen of local sections elected during 1948 were as follows: *Pacific*—Harold C. Wall, Longview Fibre Co., Longview, Wash.; *Lake States*—A. M. Heald, Marathon Corp., Menasha, Wis.; *Delaware Valley*—John P. Weidner, Container Corp. of America, Manayunk, Pa.; *Kalamazoo Valley*—P. W. Bartholomew, Hawthorne Paper Co., Kalamazoo, Mich.; *New England*—C. H. Child, Merrimac Paper Co., Lawrence, Mass.; *Ohio*—P. S. Cade, Harding-Jones Paper Co., Excello, Ohio; *Empire State*—James E. Foote, B-F-D Div., Diamond Match Co., Plattsburg, N. Y.; *Maine-New Hampshire*—John L. Parsons, Hollingsworth & Whitney Co., Waterville, Me.; and *Chicago*—Warren Price, Applied Research Services, Chicago. *The Papermakers and Associates of Southern California* (Unaffiliated) elected Bruce F. Brown, Jr., Fibreboard Products, Inc., Los Angeles, Calif.

Divisions and Committees

The major technical work of the Association was carried on by more than 70 committees in seven divisions. The progress made by these committees in developing programs, working on projects, establishing standards and recommended practices, etc., is reported throughout the year by the chairmen and will not be summarized in this report. The following will be devoted principally to personnel changes during the post year:

Engineering Division: J. W. Hemphill, Johns-Manville Sales Corp., general chairman. The division sponsored the Third Engineering Conference of the Pulp and Paper Industry at Buffalo, N. Y. Because of the fine work of this division a large number of power, maintenance, and construction engineers became members of the Association. *Steam and Power Committee:* J. E. A. Warner, Robert Gair Co., chairman; *Materials Handling Committee:* George R. Wadleigh, consulting engineer, chairman; *Drying and Ventilating Committee:* A. E. Montgomery, J. O. Ross Engineering Corp., chairman; *Engineering Research and Machine Design Committee:* Philip H. Goldsmith, Pusey & Jones Corp., chairman. At the Buffalo meeting a Hydraulics Subcommittee was established to study the factors governing the rates of flow of pulp and paper stock in pipes. K. G. MacKenzie, Eastman Kodak Co., became its chairman; *Mill Design and Economic Aspects:* Alvin H. Johnson, consulting engineer, succeeded Milton T. Jacobs of Chas. T. Main, Inc., as chairman; *Mill Maintenance and Materials:* George H. Pringle, Mead Corp., chairman. This committee delegated two of its members to represent the Association in the National Association of Corrosion Engineers.

Industrial Division: Fred C. Goodwill, St. Regis Paper Co., succeeded Werner Kaufmann, Kupfer Bros. Co., as general chairman. The present committee chairmen are: *Nonfibrous Raw Materials:* E. N. Poor, Hudson Pulp & Paper Co.; *Vocational Education:* B. E. Lauer, University of Colorado; *Mill Instrument Control:* R. W. Porter, Fritz Publications; *Water:* Because of the illness of the chairman, Lewis B. Miller of the University of Cincinnati, Miss Louise E. McGrath of the Booth Chemical Co. became acting chairman; *Fibrous Agricultural Residues:* S. I. Aronovsky, Northern Regional Research Laboratory, chairman. The subcommittee chairmen were: *Procurement, Storage and Preservation:* H. M. Blandin, Central Fibre Products Co.; *Raw Materials Classification:* Dr. Aronovsky; *Pulping:* B. D. Stahl, Terre Haute Paper Co.; *Board and Paper Manufacture:* M. F. Knack, River Raisin Paper Co., and *Testing:* N. F. Wilson, Alton Boxboard Co. This committee was transferred from the Pulp Manufacture Division.

Converting and Consuming Division: Ralph A. Wilkins, Bird & Son, Inc., general chairman; *Containers:* W. B. Lincoln, Jr., Inland Container Corp., chairman; *Graphic Arts:* R. H. Simmons Government Printing Office, chairman; *Coating:* Werner Kaufmann, Kupfer Bros. Co., chairman (The subcommittee chairmen are: *Adhesives:* Miss R. M. K. Cobb, Lowe Paper Co.; *Mechanical Equipment:* F. W. Egan, consulting engineer; *Pigments:* W. R. Willets, Titanium Pigment Co.; *Raw Stock:* W. A. Kirkpatrick, Allied Paper Mills; *Testing Procedures:* Miss Lois V. Hans, Hercules Powder Co.; *Gummed Paper:* F. W. Farrell of the McLaurin-Jones Co.; and *Wax Coatings:* J. D. Clark of the D. L. Ward Co.). This committee sponsored the publication of TAPPI Monograph No. 7 "Pigments for Paper Coating" issued in 1948. *Plastics:* E. C. Jahn, New York State College of Forestry, chairman (Its subcommittee chairmen are: *Resin Analyses:* T. A. Howells, Institute of Paper Chemistry; *Resins and Plastics:* Herman Mark, Polytechnic Institute of Brooklyn; *Resins for Paper Converting:* R. H. Mosher, Holyoke Card & Paper Co., and *Fabrication:* C. J. Straka, Westinghouse Electric Co., who succeeded N. R. Yorke of the Panelyte Div. of the St. Regis Paper Co.). The Plastics Committee was transferred from the Research Development Division, as was the *Wet Strength* Committee, K. W. Britt, Scott Paper Co., chairman.

Research Development Division: C. J. Brabender, Marathon Corp., chairman. The chairmen of the committees in this division are: *Bibliography:* C. J. West, Institute of Paper Chemistry; *Fundamental Research:* Harry F. Lewis, Institute of Paper Chemistry; (this committee sponsored the fall conference on "The Physical Nature of the Components of Wood"); *Patents:*

(Continued on page 122)

Don't let the bottom drop out of your market...

WET-STRENGTHEN your paper with Uformites

"If it isn't wet-strength paper I don't want it!" Before customers begin saying that to you, safeguard your market—wet-strengthen your paper with the UFORMITES.

Without special equipment—for as little as $4 per ton of paper—the UFORMITES boost wet Mullen values by 300%! And at the same time, they increase wet rub and scuff resistance, improve wet and dry tensile, fold, and the printing characteristics of coated paper.

Actually, you'll save money by making a better product. For the UFORMITES not only let you use lower-grade pulps without sacrificing paper quality, they also improve the sizing efficiency of rosin and improve retention of beater additives. If you make paper toweling, the UFORMITES eliminate the see-saw relationship of wet strength and absorbency. And in twisting tissue, the wet-strength resins prevent breakage on paper-twisting machines.

Whether you manufacture towels, bags, reproduction, or printing papers, glassine, greaseproof wrappings, or twisting tissues, you'll profit from using the UFORMITES. Write today for full details and samples of these urea formaldehyde resins.

Handy Facts on Wet Strength
Your copy of this free booklet will answer your technical questions about the UFORMITES, and how they are used to increase wet strength. Write for it today.

AMBERLITE W-1—a water-soluble polymer for improving the dry and wet tensile and Mullen, as well as the fold, and the abrasion resistance of paper.

RHOZYMES BB and E-5—for enzyme conversion of starch.

TAMOL P—for effective pitch control—a dispersing agent for pigments.

TRITONS—surface-active agents with a score of uses in paper manufacture—in caustic cooking of cotton fiber, as a dispersing agent for pigments and metallic soaps, emulsion-type coatings.

The Hydrosulfites—reducing agents for stripping color from rag stock or for bleaching pulp.

HYAMINES—deodorants for paperboard and glue bactericides.

UFORMITE, RHOZYME, TAMOL, TRITON, AMBERLITE are *trade-marks, Reg. U. S. Pat. Off.*

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square Philadelphia 5, Pa.

The Resinous Products Division was formerly The Resinous Products & Chemical Company

TAPPI Reflects Progress

(Continued from page 120)

C. J. Rivise of Caesar & Rivise; *Statistics:* T. A. Pascoe, Nekoosa Edwards Paper Co.; *Microbiological Control Methods:* J. W. Appling, Buckman Laboratories; *Chemical Engineering:* Roy F. Whitney, Institute of Paper Chemistry. The Plastics and Wet Strength Committees were transferred to the Converting and Consuming Division.

Pulp Manufacture Division: H. W. Bialkowsky, Pulp Div., Weyerhaeuser Timber Co., succeeded John A. Hanson of the Badger Paper Mills; *Acid Pulping:* George H. McGregor, Minnesota & Ontario Paper Co.; *Alkaline Pulping:* K. C. Chesley, Crossett Lumber Co.; *Mechanical Pulping:* R. M. Drummond, International Paper Co. (This committee was a co-sponsor with the CPPA Technical Section of the Mechanical Pulping Conference held at Poland Spring, Me. in the fall); *Paper Deinking:* Frederic C. Clark, consulting engineer; *Pulp Purification:* W. D. Harrison, Riegel Paper Corp.; *Chemical Products:* W. P. Lawrence, Champion Paper & Fiber Co. The Structural Fibrous Materials Committee was transferred to the Industrial Division.

Paper Manufacture Division: A. L. Sherwood, Sutherland Paper Co. succeeded John A. Davis of Dill & Collins Inc., as general chairman. *Preparation of Papermaking Materials:* Joseph J. Thomas of the S. D. Warren Co. succeeded P. P. Gooding of the Strathmore Paper Co. as chairman at the end of the year; *Papermaking (Cylinder):* James J. Harrison, Michigan Carton Co., succeeded O. E. S. Hedbring as chairman; *Papermaking (Fourdrinier):* B. L. Kassing, Ecusta Paper Co., resigned. No chairman was appointed in 1948.

Testing Division: James d'A. Clark, consultant, general chairman. (This division sponsored a national conference at Pittsburgh, Pa., in the fall); *Fibrous Materials Testing:* E. R. Schafer, Forest Products Laboratory; *Nonfibrous Materials Testing:* Stephen I. Kukolich, Lee Paper Co., succeeded W. F. Hathaway, Kalamazoo Vegetable Parchment Co. as chairman. (At the Pittsburgh meeting a subcommittee on Waxes and Microcrystallin Waxes was established with A. M. Heald, Marathon Corp., chairman); *Pulp Testing:* Loren V. Forman, Institute of Paper Chemistry; *Optical Properties:* A. H. Croup, Hammermill Paper Co.; *Container Testing:* W. I. Balster, Don L. Quinn Co., succeeded Mr. Quinn as chairman; *Packaging Materials Testing:* George R. Sears, Institute of Paper Chemistry; *Paper Testing:* B. W. Scribner, National Bureau of Standards; *(Erasing Properties Subcommittee:* P. W. Codwise, Beaver Wood Fibre Co., Ltd.); *Chemical Methods:* Milton Fillius, Eastman Kodak Co.; *(Alpha Cellulose Subcommittee:* A. S. O'Brien, Eastman Kodak Co.; *Disperse Viscosity Subcommittee:* Peter Van Wyck, Hercules Powder Co.); *Miscroscopy:* Thomas Fyfe, Eastman Kodak Co.

Special Committees: *Standards Committee:* Roger C. Griffin, Arthur D. Little Co., chairman; *Research Appropriation Committee:* John L. Parsons, Hollingsworth & Whitney Co., chairman; *Joint Textbook Committee:* George E. Williamson, Strathmore Paper Co., chairman.

Annual Review—Neubrech

(Continued from page 114)

the latter to make prompt shipments of new orders and enabled some mills to dispense with the system of allocating production among their customers. By September only a few mills were continuing allocations, and by the end of the year the system was generally abandoned by all, except perhaps the newsprint mills.

As supplies of paper and board products more evenly balanced demand, the market became increasingly competitive. Buyers all along the line from consumer to merchant became more quality conscious and more exacting as to service. At the same time they stubbornly resisted price advances. One of the chief problems which has confronted manufacturers for some months has been to reconcile this attitude on the part of consumers with the increased cost to them of raw materials, transportation, and labor. In fact, high costs, lowered profits, and a leveling in their volume of business were among the problems facing manufacturers and distributors at the end of 1948.

Distributors and converters were able during 1948 to build up adequate and well balanced inventories of most grades of paper and board. The attempt has not been made, over-all, to build up to the prewar ratio of stocks to sales at present high prices. An additional pressure on distributors' capital has been the tendency of many manufacturers to reduce their discount periods down to 10 to 20 days. In recent months inventories have been watched closely and orders placed only to replenish stocks or to build up new stocks of papers which earlier were in short supply. Slow moving and inferior grades of paper were liquidated even at a sacrifice in price. Holders of paper inventories have shown a current tendency to reduce stocks in view of their ability to receive prompt shipments of orders placed with the mills.

In conclusion, the trend during 1948 may be said to have been:

A continuous upward trend in production by integrated mills.

A slackening in production by many nonintegrated mills.

Closing down or a shift to other classes of paper by several marginal paper and board mills of the nonintegrated group.

A leveling-off in the demand for nearly all grades of paper and paperboard.

Emergence of a keenly competitive market.

A return to prewar standards of quality.

Mando Bleaching Plant

INTERNATIONAL FALLS, Minn. — A bleach plant with a rated daily capacity of 100 tons of bleached pulp has been opened here by the Minnesota & Ontario Paper Co. Temporarily, bleaching operations will center chiefly on the processing of sulphite pulp.

"Inauguration of bleaching operations," said President Donald D. Davis, "will give us increased operational flexibility. For the first time Mando will have the necessary facilities to produce bleached pulp, permitting production of an expanded line of paper products."

As many as six stages of treatment will be provided to produce the whiteness required in the production of high grade paper products. Under construction for two years, the Mando bleachery will eventually be equipped to process both sulphite and kraft pulp.

Centrally located in the mill proper, these new facilities are housed in three buildings. Two of the buildings, one for caustic storage and brown stock, the other for chemical preparation, supplement the four-story main bleachery which measures 68 feet by 119 feet.

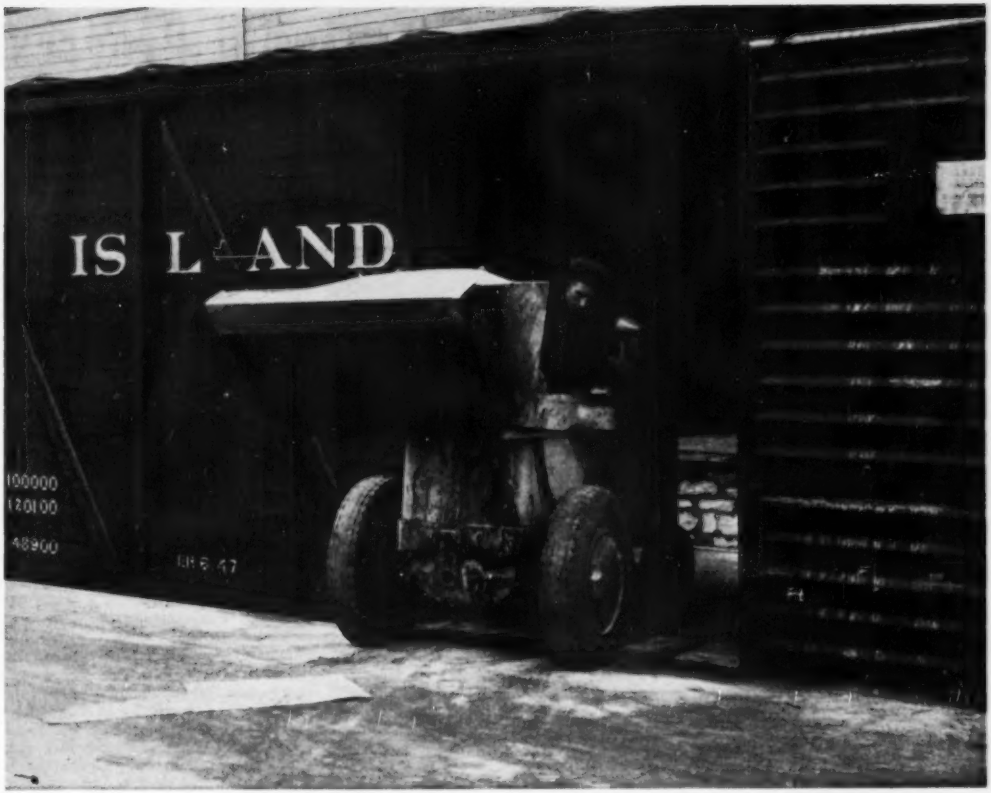
The plant features a system of push-button controls, centered on the top floor of the main Mando structure. Pumps and dump chests have been installed on the ground floor, seal boxes for the vacuum pulp washers on the second, with power units and sub-stations, complete with metal clad control panels, housed on the third.

Especially designed doors effectively isolate the third floor which is under constant air pressure, a protective measure for employes and for the electrical equipment easily damaged by chlorine gas seepage. A system of heating and ventilating has been installed here also, so that the outside air can be heated and filtered prior to being circulated.

Adam V. Pollak will supervise the operations in the bleachery.

Start of bleachery operations will also mean the initiation of the first large scale use of the new Mando filtration plant, built to eliminate color and other impurities from water used in the bleaching process. Built for an immediate capacity of 15,000,000 gallons per day, this multi-storied water filtration plant can be expanded to process up to 30,000,000 gallons in a 24-hour period.

Three 350-hp. pumps will supply the paper mill with clean filtered water which will service the bleaching operations and be used elsewhere in the mill. Provisions have also been made to furnish filtered water to the city of International Falls.



HOW TO UNLOAD A BOX CAR *FAST*

SALT CAKE
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SNOW

The processing of pulp, paper and paper products involves the varied handling of many different types of bulk materials. These must be unloaded, transported, stored, lifted, dumped and loaded—and the operations re-occur over and over again! The unloading of box cars is *just one* of the vital functions which require special handling techniques. The Model HA PAYLOADER was designed primarily to handle bulk materials under the exact conditions found in pulp and paper processing plants. Its greater horsepower has meant full loads on every trip regardless of the materials handled. Its rear-wheel steering has meant quick turning inside box cars and within narrow aisles. Its large pneumatic tires and unusual visibility has resulted in greater speed combined with greater safety. That's why Model HA Payloaders unload box cars at rates up to 50 tons per hour under certain material and distance conditions.

Hundreds of manufacturing plants are solving their normal loose-material handling problems with PAYLOADERS, also using them for *extra* jobs such as snow removal, yard and floor clean-up, dump leveling and grading. It will pay you to get *all* the facts about the all-around performance of the PAYLOADER line — facts based on 28 years of materials handling experience. The Frank G. Hough Co., 747 Sunnyside Avenue, Libertyville, Illinois.

SEND FOR LITERATURE on the 10½ cu. ft. Model HA Payloader, the ¾ yd. Model HF, the 1¼ yd. Model HL or the 1½ yd Model HM — also the 2 yd. Payloader Buggy.

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PAYLOADER
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Factors That Account for Tappi Progress

By WILBUR F. GILLESPIE

Retiring President—Technical Ass'n, of the Pulp and Paper Industry

To select a theme to keynote an annual address is a difficult problem especially when one is retiring from office. As I have attempted to find this theme there is the realization that much more might have been done in the past two years. And rather than deal with specific accomplishments it has seemed to me that a review of the basic factors that account for TAPPI's progress might be discussed with some benefit to all of us.

As I see TAPPI's progress during the greater part of the last two years, there has been no single major accomplishment that had not received recognition in some form in a previous year, and I doubt if there will be any major project completed next year to which this year's or some previous year's executive committee has not given some thought. The progress in building the TAPPI structure is not characterized by sudden flashes of accomplishment, but rather by a planned steady growth continuing from year to year.

I am one of those who believe that the foundation on which the TAPPI structure is built is broad, thick and reinforced and, with your permission, I want to organize and discuss with you for a few minutes some of the reasons why we have become a respected group nationally and internationally.

Members join societies to receive benefits therefrom. Fundamentally, we hope to gain — and rightly so. The benefits derived from TAPPI are derived from four main sources.

(1) *MEETINGS:* Within the week upwards of 1500 will register for our sessions. We come here for several purposes, but the motive is a profit one. There will be a number of outstanding papers and almost, without exception, we shall go back to our daily task with a new idea. Or perhaps, we come to make contacts, and that will be profitable. Some of us come here to engage in strictly business deals. Some of us delight in the renewal of old acquaintances. And, while we are thus profiting, we should be conscious of the fact that it is TAPPI that is providing us this opportunity.

And let no one think that the effort that goes into such a meeting as this is trivial. It is a major project. Such an undertaking increases in difficulty with the years. It should be so. TAPPI could not be a static organization and meet the challenge of improving the standard as the years pass.

An address delivered at the annual meeting of TAPPI at Hotel Commodore, New York City, February 21, 1949.

W. F. GILLESPIE

During the fall specialized meetings are held. The six meetings held this fall have each been masterpieces of organization and accomplishment. Plastics, Fundamental Research, Mechanical Pulping, Testing, Engineering and Fibrous raw materials groups attracted about fourteen hundred registrants. I know they were good and so do those who attended. TAPPI provides the structure in which Ed Jahn, Harry Lewis, John Parsons, Jim Clarke, Bumps Hemphill and Sam Aronovsky can organize their committees and provide such excellent programs for the specialized groups. I know TAPPI is grateful to them. I believe they appreciate TAPPI.

And, scattered about the country, are 10 local sections of TAPPI, each meeting regularly at different intervals. From four to a dozen meetings are held each year by each section. The opportunities of meeting nearby friends and discussing mutual problems have again been largely the result of overall TAPPI organization. A sincere and, I believe, successful effort in recognizing and solving the problems of local section and national TAPPI relations has been the task of Ken Geohegan. His efforts in this have been the subject of much favorable comment.

While discussing meetings, I want to call your attention to the Fall Meeting this year in Portland, Oregon, on September 11th - 15th. The Pacific section is sponsoring this meeting and already has done much organizational work. It has been arranged that there will be no conflicting meetings in the Fall. It is to be hoped that our membership will accept the invitation to the Pacific Coast in large numbers, and those of you who do will enjoy a profitable meeting in a delightfully hospitable part of our country.

By the examples just quoted you, some of us feel that TAPPI is adequately fulfilling one of the main purposes of technical groups in providing the opportunities for exchange of ideas.

(2) *PUBLICATIONS:* Any scientific society, such as ours, must have a strong publication policy. For many years, we have been able to point with pride to the literature that TAPPI has supplied its membership.

During most of these years an arrangement has been maintained with *Paper Trade Journal* to publish a technical section edited by our secretary. It was with considerable regret that this pleasant association was terminated this year.

In its place you are offered our new magazine *Tappi.* We hope it will meet with your approval. It has been a major task to prepare it for you as scheduled. What you have seen is not perfect but with the talent that has offered help, I feel confident we are well on the way to having a publication of which we will feel proud.

One of the sacrifices that we had to make in our publications policy was the elimination of Technical Association Papers. This was done with considerable regret, as many of our members desire a bound copy of the association activities at the end of the year. However, provision has been made that a number of bound volumes of the technical section of *Tappi* will be available to those who desire them, but at a cost not to exceed five dollars. You must, however, reserve a copy through the secretary. Please do this immediately so you will not be disappointed at a later date.

You may also have noted that the contents of the new journal are so arranged that the binding of the technical section will be easily arranged for making a volume of approximately 600 pages at the end of the year.

I do not want to emphasize that the membership as individuals, committees, local sections and executive committee must share the responsibility in obtaining the continued improvement that we stated as our objective in this publication.

TAPPI Monographs now number seven. Each one is an excellent contribution. Seven more are in various stages of preparation. Two should be

ready this year by the Coating Committee. Two more are very good possibilities. It may be found desirous to publish part of these in the new journal but, in either case, you have further evidence of an excellent publications policy.

We have announced previously that a loose leaf binder will be published covering routine control methods. These are well along and it is believed they will be ready for distribution in the near future.

Our year book will continue to be an indispensable feature of our publications.

In meeting the second requirement of any scientific society, I feel that the TAPPI standard measures up well with any high standard you may care to select.

(3) *SERVICES:* But it is not sufficient to merely publish. There are other services which are necessary to supply the needs of membership.

One of the greatest contributions that has been made is the setting up of standards. This is considered by some groups as adequate justification for existence. TAPPI's contribution in this respect has been an outstanding one. Almost 200 standard methods have been contributed, covering a wide range of subjects. These standards are subject to continuous scrutiny and revision, and are being constantly improved as improvements are shown to be necessary. Many of our standards are accepted internationally. Others have been accepted by the armed forces and other scientific groups — a tribute to the quality of the work that has gone into the framing of these standards.

This year, for the first time, a meeting was held in Pittsburgh for the sole purpose of discussing testing methods with the objective of improving standards. The attendance of 160 technicians at this meeting was a tribute to the value of this important phase of our activities.

Over the years, members have received almost 400 special reports that have been developed, largely, at the request of individual members. For the most part, these are the results of questionnaires sent out through the association office where they are assembled and edited and passed on to the interested members. A complete file of these represents an accumulation of information that it would be impossible to acquire in any other way.

During the war years, our association did an outstanding job. Many of you remember the Chicago and Boston meetings sponsored by TAPPI on packaging — a problem of serious importance. One should not be praised unduly for doing one's duty, but I did want to mention this contribution as an illustration of what TAPPI can and will do when any special emergency arises. Within our membership we have the technical ability and we have an organization capable of concentrating our efforts where required most.

Most of you are familiar with TAPPI's contribution jointly with our Canadian friends in the publication of the best series of text books on papermaking in existence.

Our close contacts with other scientific groups give us the means to pass on to our members specialized information as acquired.

The miscellaneous small services rendered our members through our association office are too numerous to mention.

In respect to services to members, I believe TAPPI has measured up well.

(4) *INVESTIGATIONS:* I believe that a major part of a scientific organization's activities should be to foster original investigations and adequately finance them. I believe that in this respect TAPPI could do a much better job. Over a ten year period, appropriations aggregating less than $16,000 have been expended on 15 projects. For an association with approximately 70 committees, this is not enough.

I believe there are two reasons for this relative inactivity in a field which, I believe, to be an important part of TAPPI work.

One of the reasons is that the committees themselves are not actively pushing the projects which they state as objectives. The other is that executive committees, at least those on which I have sat, have not given enough emphasis and encouragement to this phase of our program.

One might argue if one is the cause and the other is the effect, and which is which, but the net result is the same— a lack of original investigation sponsored by committees. I should like to see the executive committee give earnest consideration to the solution of this problem and I believe there are approaches that can be made which will solve it.

Lest I should appear to be unappreciative of the outstanding contributions of several committees, let me hasten to say that I believe a considerable number are doing a perfectly magnificent job.

If TAPPI will bolster this phase of its activities, I believe it will round out a four-fold program that will make it a still stronger organization and thus enhance the respect with which it is held by the whole paper industry.

Next to the southern Democrats, TAPPI ex-presidents belong to the most forgotten group in the country.

I shall soon be a member of both groups.

But, before I join the latter, may I take this opportunity of thanking TAPPI members for the privilege of being your president. I feel deeply indebted to you for the opportunity of serving. You have been kind — not often have you censured me for my many shortcomings. The happiness of making so many new friends among you will be a pleasant memory.

I have had the opportunity of visiting six of our local sections and from Maine to the Pacific Coast, I find that the paper industry contains a swell bunch of fellows.

May I tell you, also, that in the executive committee, you have a group of thoroughly competent business men. They have traveled from all parts of the country to attend executive committee meetings at considerable sacrifice. We have had our arguments, but on more than one occasion has the loser in the argument worked the hardest to put across the idea that the majority approved. I can say, without reservation, that your executive committee is sincere in its purpose to do its best for the membership at large.

And, finally, may I pay tribute to our staff. To accomplish so much with such a limited personnel is in itself evidence of the energy and efficiency of Mac, Dick and their associates. TAPPI is a fortunate organization in having Mac's leadership. It is a leadership with a wonderful background of experience, and contacts within and without the industry. His intimate knowledge of a maze of details does not hamper his broad view of association policies.

It is not too much to say that the lion's share of the progress TAPPI has made over the years is the result of Mac's leadership.

And now, in closing, permit me to repeat that one of the most pleasant experiences of my life is the privilege you have accorded me in serving as your president, and please accept my sincere thanks for your tolerance and help during the past twenty months.

KROPA TO BORDEN CO.

Dr. Edward L. Kropa will join the Borden Co. chemical division as chemical director on March 1, succeeding Dr. John F. Corwin. For the past 12 years, Dr. Kropa has been with the American Cyanamid Co.

Joins Carter, Rice

BOSTON—Erwin W. MacDonald, who for the past several years has conducted his own business, Paper Inc., in Brockton, Mass., has dissolved that business to assume a sales administrative position with the Carter, Rice & Co. Corp. In his new position Mr. MacDonald will be responsible for merchandising and sales with the C. A. Esty Paper Co., division of Carter, Rice & Co. in Worcester, Mass.

PTA Applicant

CINCINNATI—C. A. "Al" Ragor of the Chatfield Paper Corp., has applied for membership in the Paper & Twine Ass'n.

Other Elections

(Continued from page 53)

Grant Richardson, assistant vice-president and manager of sales of the Hammermill Paper Co., and former chairman of the Export Committee of APPA, spoke on the necessity of industry's taking a long-range view on export trade.

John Evans, director, Commodities Division, Office of International Trade, and chairman of the Committee on Reciprocity Information and of the Trade Agreements Committee, reviewed the Havana Charter and the Reciprocal Trade Act and its importance to the domestic industry.

Glassine & Greaseproof Manufacturers Ass'n.

Executive Committee: Paul E. Hodgdon, president, Deerfield Glassine Co., Monroe Bridge, Mass. (chairman); Folke Becker, president, Rhinelander Paper Co., Rhinelander, Wis.; Elmer H. Jennings, vice-president, Thilmany Pulp & Paper Co., Kaukauna, Wis.; Paul F. Moore, president, Westfield River Paper Co., Russell, Mass.; John L. Riegel, president, Riegel Paper Corp., New York City; and Arthur Schwab, managing director, Hamersley Mfg. Co., Garfield, N. J.

Groundwood Pulp Manufacturers Ass'n.

President, James G. Conley, Fraser Co.'s.; vice-presidents: E. J. Doonan, Gould Paper Co., and Lawrence Stedman, Kimberly-Clark Corp.; Board of Governors: E. G. Murray, St. Regis Paper Co., R. O. Warner, Minnesota & Ontario Paper Co., and Paul A. Marguary, International Paper Co.; Secretary-Treasurer, R. E. Canfield.

Kraft Paper Ass'n.

Gilford F. Henderson of the Brown Co. was re-elected president of the Kraft Paper Association, Inc., at its annual meeting held on February 23 at the Waldorf-Astoria. Wayne A. Brown of the Crown Zellerbach Corp. was elected vice-president to succeed J. B. Cowie of the Hollingsworth & Whitney Co., who now has transferred his office to Boston.

The following also were named to the Executive Committee for 1949-1950: W. M. Allin, Southern Advance Bag and Paper Co.; J. B. Cowie, Hollingsworth & Whitney Co.; H. S. Daniels, Union Bag & Paper Corp.; J. R. Diggs, Mosinee Paper Mills Co.; W. J. Dixon, St. Regis Paper Co.; D. G. Driscoll, Sorg Paper Co.; K. O. Elderkin, Crossett Paper Mills; L. W. Gould, Gaylord Container Corp.; T. V. Hefferman, Gilman Paper Co.; William Mazer, Hudson Pulp & Paper Co.; S. M. Phelan, Jr., West Virginia Pulp & Paper Co.; W. C. Shorter, Camp Mfg. Co.; and George Stuhr, Southern Kraft Division, International Paper Co.

Paper Napkin Ass'n.

New members of the Executive Committee are: W. F. Erisman, E. R. Krueger, J. F. Meyers, R. W. Bertram, M. G. Dokken, Floyd R. Graham, K. C. Hamilton, and Norman Eber.

Salesmen's Ass'n. of the Paper Industry

President, Alan B. Helffrich, St. Regis Paper Co.; Western vice-president, Daniel H. Keck, Kimberly-Clark Corp.; assistant Western vice-president, T. Donnell Evans, W. C. Hamilton & Sons; Eastern vice-president, George Watson, Mead Corp.; and assistant Eastern vice-president, L. Worthington Dodd, Champion Paper & Fibre Co.; secretary-treasurer, E. G. Amos.

U. S. Pulp Producers Ass'n.

Executive Board — 1949

Regional Directors: New England, Downing P. Brown, Brown Co.; Middle Atlantic, Norman W. Wilson, Hammermill Paper Co.; South, Alexander Calder, Union Bag & Paper Corp.; Lake States, W. M. Wright, Kimberly-Clark Corp.; West Coast, L. K. Larson, Weyerhaeuser Timber Co.

Directors at Large: R. M. Buckley, Soundview Pulp Co.; Willard J. Dixon, St. Regis Paper Co.; L. W. Gould, Gaylord Container Corp.; Amor Hollingsworth, Penobscot Chemical Fibre Co.; Stuart E. Kay, International Paper Co.; W. S. Lucey, Rayonier, Inc.; James L. Madden, Hollingsworth & Whitney Co.; Reuben B. Robertson, Jr., The Champion Paper & Fibre Co.; John Stevens, Jr., Marathon Corp.; Lawson Turcotte, Puget Sound Pulp & Timber Co.

Executive Director: Oliver M. Porter, 122 East 42nd street, New York 17, N. Y.

Sulphite Paper Mfr's.

New York — The Sulphite Paper Mfr's., Ass'n., meeting at the Waldorf-Astoria Hotel on February 22, elected A. P. Mitchell to its board of governors and re-elected all of the other board members. Mr. Mitchell is vice-president, secretary and general sales manager of the Riegel Paper Corp., New York City. The Association also elected Leo E. Croy vice-chairman of the Bleached Group. Mr. Croy is executive vice-president of the Marathon Corp., Menasha, Wis. The official line-up follows:

General chairman, George Stuhr, Southern Kraft Div., International Paper Co., New York; vice-chairman, bleached group, Leo E. Croy; vice-chairman, unbleached group, Donald F. McCall, vice-president, Racquette River Paper Co., New York; vice-chairman, manila group, Jack B. Cowie, sales manager, Hollingsworth & Whitney Co., Boston; vice-chairman, machine glazed wrapping group, Neil E. Nash, vice-president, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; and vice-chairman, bleached converting group, Gilford F. Henderson, sales manager, paper division, Brown Co., New York.

The new board of governors will consist of the above named officers together with the following: Wayne A. Brown, manager, Eastern division, Crown Zellerbach Corp., New York; James G. Conley, sales manager, Fraser Paper, Ltd., New York; Allan G. Hendry, Consolidated Water Power & Paper Co., Chicago; A. P. Mitchell; and Alfred Southon, executive vice-president Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

Waxed Paper Inst.

Executive Committee: W. P. Patterson, Specialty Paper Co. (chairman); vice-chairmen: C. C. Sherman of the H. P. Smith Paper Co., P. M. Beach, Riegel Paper Corp., E. L. Berkley, Waxide Paper Co., Louis Kimple, Dixie Wax Paper Co., John Snyder, Marathon Corp., and E. C. Wieman, Western Wax Paper Co.. Secretary-treasurer, A. H. Noelke; assistant to secretary-treasurer, P. J. Pannier.

Writing Paper Manufacturers Ass'n.

New York—W. B. Zimmerman was elected president of the Writing Paper Manufacturers Ass'n. at its 88th annual meeting at the Waldorf-Astoria Hotel on February 22. Mr. Zimmerman is executive vice-president of the Howard Paper Mills, Inc., Dayton, Ohio.

Elected as vice-presidents of the Association were A. C. Remley, Nekoosa-Edwards Paper Co., and Bruce Crane, Crane & Co., Inc.

The retiring officers are M. D. Bardeen, Lee Paper Co., president of the Association for two years; H. V. Burgee, Parsons Paper Co., retiring vice-president; and W. B. Zimmerman, newly elected president.

M. C. Dobrow was re-elected executive secretary-treasurer. This marks the beginning of Mr. Dobrow's 34th year with the Association. John F. Darrow was re-elected assistant secretary and Olive F. McGill was re-elected assistant treasurer.

Members elected to the Association Executive Committee representing the *Rag Content Paper Group* were: Bruce Crane, Crane & Co., Inc., who also was elected chairman of the Rag Content Paper Group; G. H. Gerpheide, Hawthorne Paper Co.; A. C. Gilbert, Gilbert Paper Co.; Hale Holden, Byron Weston Co.; R. S. Madden, Valley Paper Co.; D. E. Oberweiser, Fox

River Paper Corp.; E. C. Reid, American Writing Paper Corp.; A. J. Schierl, Whiting-Plover Paper Co.; G. E. Williamson, Strathmore Paper Co.

Members elected to the Association Executive Committee representing the *Sulphite Bond Group* were: A. C. Remley, Nekoosa-Edwards Paper Co., who also was elected chairman of the Sulphite Bond Group; J. G. Conley, Fraser Paper, Limited; W. J. Garrity, Munising Paper Co.; H. H. Hanson, W. C. Hamilton & Sons; W. L. Jennings, West Virginia Pulp & Paper Co.; C. B. Morgan, Eastern Corp.; F. H. Savage, International Paper Co.; H. W. Suter, Jr., Champion Paper & Fibre Co.; J. D. Zink, Hammermill Paper Co.

In addition, the following were elected to the Association Executive Committee: R. M. Swaney, Franklin Paper Co., representative of the *Bristol Board Group;* D. T. Quirk, Peninsular Paper Co., representative of the *Cover and Text Paper Group;* W. F. Tatum, Smith Paper, Inc., representative of the *Thin Paper Group.*

H. H. Hanson was re-elected as the Association's representative on the APPA board of governors; H. V. Burgee was elected as alternate.

Speakers at the meeting included Raymond Moley; M. D. Bardeen, retiring president of the Association; E. G. Amos, secretary of the APPA Committee on Industrial Relations; W. W. Corlett, counsel, and M. C. Dobrow, executive secretary of the Association.

Harrison R. Baldwin, who retired on January 1, 1949, as vice-president of the Hammermill Paper Co., was elected an honorary member of the Association in recognition of his outstanding service on behalf of the industry. Mr. Baldwin was president of the Writing Paper Association from mid-1932 to 1935 and served on its Executive Committee for 18 years.

The L. L. Brown Paper Co., Adams, Mass., was cited as joining the ranks of the Century Club by virtue of the fact that 1949 marks their 100th year of papermaking. Nine other members already have past their 100-year mark. They are Beckett Paper Co., Crane & Co., Inc., Curtis Paper Co., C. H. Dexter & Sons, Inc., Hurlbut Paper Co., Knowlton Brothers, Smith Paper, Inc., Southworth Co., and Tileston & Hollingsworth Co.

The meeting was attended by approximately 150 persons.

American Pulpwood Ass'n.

Frank A. Kelly of the Northwest Paper Co., was elected president of the American Pulpwood Ass'n. Other officers chosen, in addition to Mr. Kelly were: vice-presidents— M. H. Collet, West Virginia Pulp & Paper Co.; E. O. Ehrhart, Armstrong Forest Co., and R. R. Drummond, Oxford Paper Co., and executive secretary-treasurer, H. E. Brinckerhoff.

The board appointed the following committees for 1949-50: *Executive*—Frank A. Kelly, E. O. Ehrhart, C. O. Brown, R. R. Drummond, H. G. Schanche, W. J. Damtoft, K. A. Swenning, R. W. Lyons, Kendrick Burns and M. H. Collet. *Advisory*—J. L. Madden, C. O. Brown, W. J. Bailey, R. W. Hovey, W. D. Comings and Paul Koenig. *Public & Industry Relations and Legislation*—K. A. Swenning, chairman; W. J. Damtoft, C. O. Brown, M. H. Collet and Norman S. Moe. *Conservation & Operation*—C. S. Herr, chairman; E. O. Ehrhart, E. J. Gayner, 3d, D. B. Demeritt, Bruce Buell, J. J. Armstrong and M. H. Collet.

At the annual meeting of members in the morning the following were elected to the board of directors: *Northeast*—H. G. Schanche, Brown Co.; E. O. Ehrhart, Armstrong Forest Co.; Kendrick Burns, S. D. Warren Co.; and C. O. Brown, International Paper Co. *Appalachian*—E. A. Sterling, Johns-Manville Corporation; M. H. Collet, West Virginia Pulp & Paper Co.; Paul Koenig, Glatfelter Pulpwood Co., and B. E. Claridge, Hammermill Paper Co. *Southern*—J. E. McCaffrey, International Paper Co.; W. J. Damtoft, Champion Paper & Fibre Co.; T. W. Earle, Gair Woodlands Corporation, and E. J. Gayner, 3rd, Brunswick Pulp & Paper Co. *Lake States*—E. B. Hurst, Consolidated Water Power & Paper Co.; G. B. Amidon, Minnesota & Ontario Paper Co.; H. R. Palmquist, Marathon Corporation, and R. W. Lyons, Kimberly-Clark Corporation. *At Large*—J. J. Armstrong, Union Bag & Paper Co.; C. G. Paine, Eastern Corporation; W. J. Bailey, West Virginia Pulp & Paper Co.; D. B. Demeritt, Dead River Co.; H. V. Hart, St. Regis Paper Co.; L. J. Freedman, Penobscot Purchasing Co.; R. R. Drummond, Oxford Paper Co.; F. E. Pearson, Jr., Eastern Pulpwood Co., and Karl A. Sweenning, Hollingsworth & Whitney Co.

Tissue Ass'n., Inc.

H. G. Wintgens, vice-president, Hoberg Paper Mills, Inc., Green Bay, Wis., president; C. E. O'Connor, Jr., B.F.D. Div. Diamond Match Co., New York City, vice-president; R. W. Sweet, president, Sweet Bros. Paper Mfg. Co., Phoenix, N.Y., treasurer; Ross A. Fife, executive secretary.

Members At Large: Messrs. Wintgens, O'Connor, Jr., Sweet, and: John J. Cahill, Ben Mont Papers, Inc.; W. F. Erisman, Erving Paper Mills; Samuel Lopin, Hudson Pulp & Paper Co.; John McKirdy, Jr., Scott Paper Co.; H. L. Nichols, Northern Paper Mills; B. I. Reider, Victoria Paper Mills Co.; W. J. Servotte, Bay West Paper Co.; R. B. Stevens, Stevens & Thompson Paper Co.; and W. C. White, Jr., Pequannock Valley Paper Mills.

Divisional Officers: (Toilet Tissue) Wayne A. Brown, National Paper Products Co., chairman; Gordon Ware, Straubel Paper Co., vice-chairman. (Paper Towel) W. J. Servotte, Bay West Paper Co., chairman; R. T. Cone, Reed Tissues Corp., vice-chairman. (Facial) R. M. Young, Pond's Extract Co., chairman; Wm. Medoff, Sitroux, Inc., vice-chairman. (Jumbo Roll) George Dunn, Dunn Paper Co., chairman; Ralph Burrows, Burrows Paper Corp., vice-chairman. (Wrapping) Wm. Shafer, Flower City Tissue Mills, chairman; Stanley Reed, Crystal Tissue Co., vice-chairman. (Gift Wrap) Philip C. Toye, American Tissue Mills, chairman; J. T. Jaret, Ben Mont Papers, Inc., vice-chairman. (No. 2 Wrapping) James F. Suter, Rondout Paper Mills, chairman; J. L. Sullivan, North End Paper Co., vice-chairman.

The chairmen of the respective product groups complete the board of directors.

Waterproof Paper Manufacturers Ass'n.

A. J. Thiel, vice-president of the Angier Corp., Framingham, Mass., was elected president of the Waterproof Paper Mfr's. Ass'n., succeeding George Wilkins of Specialty Converters, East Braintree, Mass. Charles Wood, president of the Simplex Paper Corp., Adrian, Mich., was elected vice-president, succeeding Frank Hall of the Chase Bag Co. Philip O. Deitsch was again designated Administrative Officer, marking the beginning of his eighth consecutive term.

In addition to Messrs. Thiel and Wood, other officers and members of the board elected were: H. A. Anderson, president, Sisalkraft Co., Chicago; G. W. Chadwick, vice-president of W. Kalston & Co., Inc., Old Bridge, N. J.; G. E. McCorison, vice-president, Thilmany Pulp & Paper Co., Kaukauna, Wis.; C. N. Campbell, president, National Waterproof Papers, Inc., Camden, N. J.; S. A. Feely, vice-president, Keystone Roofing Mfg. Co., York, Pa.; D. F. Smith, director, Scutan Sales, Union Bag & Paper Corp., New York City; L. R. Watson, sales manager, Tuttle Press Co., Appleton, Wis.

Natchez Rayon Pulp Mill

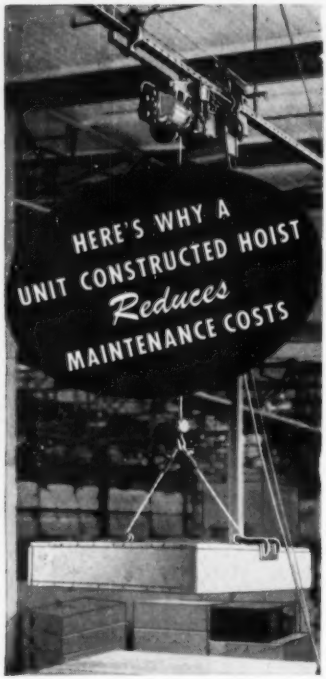
MOBILE, Ala. — Work will start immediately on the International Paper Co.'s new $20,000,000 rayon pulp mill at Natchez, Miss., it was disclosed on February 24 by Major Jack Friend, vice-president of the company and head of its Southern Kraft Division.

OK's Federal Funds

BOSTON—The Public Health Committee of the Massachusetts Legislature on February 17 approved a measure authorizing the Department of Public Health to take advantage of the availability of federal funds to be used in the abatement of river and stream pollution.

Cash Income, $3,320,000

OTTAWA—The Canadian Government reports that cash income derived from the sale in Canada of forest products totalled $3,320,000 in the 3rd quarter of 1948.



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AMERICAN PAPER AND PULP ASSOCIATION'S PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current weeks—1949		Corresponding Weeks—1948	
January 8	94.5	January 10	99.4
January 15	94.8	January 17	99.9
January 22	95.3	January 24	101.1
January 29	94.8	January 31	103.6
February 5	93.8	February 7	99.2
February 12	**95.0	February 14	**100.5

** Capacity in tons—179,623. ** Capacity in tons—172,058.

COMPARATIVE MONTHLY SUMMARIES

1948						1949	
Jan.	100.1	May	100.5	Oct.	‡99.1		
Feb.	99.8	June	95.7	Nov.	‡97.3	Jan.	‡90.6
Mar.	100.8	July	85.3	Dec.	‡87.1		
Apr.	100.8	Aug.	96.8				
		Sept.	91.8	Year Avg.	‡96.3		

‡ Preliminary Ratios.

COMPARATIVE YEARLY SUMMARIES

	1942	1943	1944	1945	1946	1947	1948	1949
Year to Date	104.1	87.6	88.7	86.8	95.2	104.2	100.5	94.7
Year Average	90.4	87.8	88.1	89.4	101.1	104.3	96.3	

PAPERBOARD OPERATING RATIOS†

Current weeks—1949		Corresponding Weeks—1948	
January 8	79	January 10	99
January 15	93	January 17	104
January 22	92	January 24	104
January 29	88	January 31	103
February 5	87	February 7	100
February 12	86	February 14	101

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.	Year Avg.
1948	99	100	102	102	100	94	81	92	91	96	94	84	95
1949	81												

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Rice-Barton Research Corp.

WORCESTER, Mass.—The Rice Barton Research Corp., has been chartered in Massachusetts to "develop products and processes" in the paper-making industry, it was disclosed on February 17.

The corporation was organized by officers of the Rice Barton Corp., of 65 Tainter street, and shortly will set up a laboratory here. President Charles S. Barton, states. Other officers are: G. A. Peterson, vice-president, and Stuart B. Dickerman, treasurer. The three, with George S. Barton, Lester M. Start, Peter Barton and Robert S. Bowditch, make up the board of directors. All are associated with Rice Barton Corp., President Barton as vice-president; Mr. Peterson as assistant sales manager, and Mr. Dickerman as treasurer.

The parent company makes paper-making machinery, and recently took over the basic developments of Kurt Wandel of Honeybrook, Pa., in preparation of fibers for paper making. This gives Rice Barton a complete line, as the new corporation will develop machinery to prepare raw materials for the parent company's machinery.

"The new machinery which we shall start developing as soon as we can set up a laboratory," President Barton said, "differs from that now in general service, by use of brushes in preparing the fibers to make pulp, instead of knives.

"We hope also to develop machinery that will make greater use of waste paper. The economic loss by discard of old paper is large. We hope to be able to develop machinery and processes that will enable a greater re-use of old paper than now, and to make such re-use economical. Old paper is now being salvaged, but at a higher cost than is desirable in the business.

Export Packing Guide

NEW YORK—The United States Paper Exporters Council discloses that in response to the demand for improved, simplified methods for export packing, its Packing Committee is completing a visual guide for the export packing of paper.

The guide will contain complete information and suggested procedures illustrated by drawings and pictures outlining the minimum standards and simplest methods found practical for export packing. It is scheduled for release about April 1.

Copies may be reserved by calling or writing to United States Paper Exporters Council, Inc., Room 2130, 165 Broadway, New York 6, N.Y.

Miss Peterson Sails

NEW YORK—Miss Virginia E. Peterson, JEIA's representative charged with purchasing wood pulp and paper for Bizonia, departed for Germany on February 15, a passenger on the Gen. A. M. Patch, due Bremerhaven, February 23. Home leave in Iowa ended, Miss Peterson spent several days in Washington, D.C., consultations. Communications addressed to Paper and Pulp Sales Section, Import Dept., Joint Export-Import Agency, Frankfurt, Germany, will reach her desk.

Tells TAPPI About Stream Pollution

KALAMAZOO — "Current interest in stream pollution is but one manifestation of the fact that our country is approaching its saturation point from the standpoint of population," Dr. Willis M. Van Horn, of the Institute of Paper Chemistry, Appleton, Wis., told the Kalamazoo Section of TAPPI on February 3.

"Many years ago," he continued, "biologists predicted that the United States would reach its normal maximum population about 1960. The units of any normal population compete with each other for the use of the available natural resources, among which are the streams and rivers, and this competition becomes more severe as the population approaches or passes its normal maximum. As the population grows, people become more and more aware of the circumstances of their environment — in the current situation the stream pollution problem."

The speaker reviewed the economic and industrial development of the country and its dependence on the use of streams. Other uses of these waters for recreation were also described.

"At the present time," Dr. Van Horn concluded, "we have a large industrial economy based on the use of streams, sometimes to their detriment. When the country was younger and the population less dense, these conditions, in many instances, were unnoticed, but as the population grew more and more people became aware of them. The pulp and paper industry is a case in point. It must have a large and economic source of water, without which it cannot exist. There is no question that such use of water may depreciate its use for other purposes. The pulp and paper industry has recognized its responsibility in this respect and has made great strides in solving its problem. Much remains to be done, however, and while the task presents many difficulties, the industry confidently expects to place itself in a position where it can use the water without causing grounds for reasonable complaint."

Bizonia Newsprint Use

OTTAWA—Newsprint consumption in Bizonia during the 12 months ended next June is estimated at 92,800 tons, of which 25,600 tons will be made available through the ERC and the remainder by mills in this terrtiory, states a report by the Foreign Trade Service, Canadian Government, from Frankfurt, Germany. The newsprint position is better than at any time since the occupation commenced, it adds.

The report continues that Bizonia's newsprint mills, whose entire production is channeled into domestic use, will probably exceed their target figure of 67,200 tons as the mills now are averaging an output of 1,500 tons weekly. This is approximately 25 percent over production levels prevailing in January, 1948.

Marshall Plan purchases of newsprint have been made in Czechoslovakia, Poland and Austria by the Joint Export-Import Agency. A contract for 6,268 tons was signed recently, and deliveries are scheduled to begin in the near future. Until these imports begin to arrive, temporary shortages may continue in some areas. A distinct improvement in the supply situation is anticipated, however, early in 1949. This is to some extent contingent on the speed with which contracts for the additional newsprint imports authorized by the ECA can be secured in world markets, which are highly competitive as a result of the universal shortage of newsprint.

It is expected that book paper schedules will be met also, this report points out. The 12-month production target is 143,000 tons. Since currency reform, output has averaged 12,000 tons per month, it concludes.

Adds $600,000,000

FORT FRANCES, Ont.—Pulp and paper products shipped from Canada last year were the largest single item in Canada's external trade, J. F. MacKellar, resident manager of the Ontario-Minnesota Pulp & Paper Co., here, said. "In 1948, products of our industries accounted for about two out of every five export dollars brought into Canada from the U.S. and for more than two out of every ten dollars which the Dominion collected through all of its world trade. Pulp and paper thus added $600,000,000 in valuable foreign currency to the wealth of Canada during 1948."

Snows Aiding Norway

WASHINGTON—Since an earlier pessimistic report on the chances of moving outward the large fall of timber in Norway this season, long-delayed snows have now opened the way for moving a timber-fall that has already passed the earlier quotas for the entire winter, a local Norwegian news source said early this month.

"Latest reports from Norwegian logging centers describe a fall which is already above the quotas for the entire winter," said the source. "Long-delayed snows made for ideal falling conditions, followed by adequate snows all over the country.

"Timber hauling from the woods to assembly points is now beginning to reduce the stores of stacked logs, allaying an earlier fear that delayed hauling operations might result from lack of snow."

Besides better stocks for building, the increased timber fall will improve the position of the wood-processing industry in Norway it was pointed out, which has been operating at a fraction of capacity because of the limited output previously.

Canadian Wages-Salaries

OTTAWA—Average weekly salaries and wages in the pulp and paper manufacturing industry amounted to $2,954,-053 at November 1, 1948, with average weekly salaries and wages rising to $56.98 at November 1, 1948, as against $56.90 at October 1 and $51.32 at November 1, 1947, and the average hourly earnings being 112.3 cents at November 1, 1948, compared with 112.4 at October 1 and 99.7 at November 1, 1947, according to the latest report of the Canadian Government. The average hours per week reported at November 1, 1948, was 49.2, at October 1, 1948, 49.1, and at November 1, 1947, 49.7.

Employment in this industry stood at 138.3, 141.8 and 139.4 at November 1, 1948, October 1, 1948 and November 1, 1947, with payrolls standing at 247.7, 253.6 and 225.2 at these respective dates, based on June 1, 1941, being equal to 100.

The proportion of men in this industry was 95.2 percent against women 4.8 percent at November 1, 1948, whereas on the same date of the preceding year these were 94.7 percent men and 5.3 percent women.

Manuacturing Production, Canada, 1947, Preliminary Estimate

(Figures for 1946 shown in brackets)

Industry	Establishments	No. of Employes	Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials	Gross Value of Production
Pulp and Paper	(113)	49,946 (44,967)	$129,477,995 ($101,364,636)	$55,442,396 ($46,202,000)	$295,444,332 ($223,448,338)	$706,971,628 ($527,814,916)
Boxes and Bags, Paper .	(150)	11,925 (12,173)	$19,141,535 ($16,476,657)	$684,415 ($572,080)	$52,609,914 ($41,169,182)	$89,713,006 ($74,500,862)
Roofing Paper, etc. .	(21)	2,171 (2,015)	$4,275,304 ($3,269,745)	$492,258 ($405,703)	$14,557,380 ($11,577,563)	$27,733,496 ($22,785,134)
Miscellaneous Paper Products ...	(187)	8,252 (7,692)	$13,951,650 ($11,726,912)	$669,335 ($585,804)	$45,383,711 ($35,260,304)	$79,762,316 ($64,294,965)
Sawmills	(6,001)	54,355 (49,352)	$81,239,068 ($63,811,260)	$2,862,263 ($2,394,138)	$209,059,030 ($156,107,527)	$405,252,469 ($287,910,057)

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WHITE WATER HEATER

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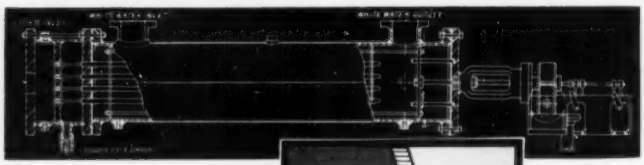
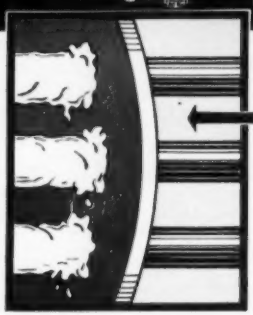


HOW IT WORKS

The transverse heater baffles, which also serve as tube surface cleaners, are connected by tie rods to the yoke plate, which in turn is connected to the drive mechanism at the right. The time controls close the motor circuit at predetermined intervals. The yoke plate moves each baffle longitudinally along the tubes, until the drive mechanism reverses the action and returns the baffles to their original position.

Available in models for either manual, electric motor or hydraulic piston drive. Automatic types operate on adjustable predetermined time schedules.



BAFFLES MOVE FORWARD AND BACKWARD LEAVING TUBES CLEAN AS A WHISTLE

Patent No. 1826747
Other Patents Applied For

A BATCH OF MANUAL TYPE SELF CLEANING HEAT EXCHANGERS READY FOR SHIPMENT.

Every Inch of Every Tube Is Thoroughly Cleaned At Every Cycle!
100% Heater Capacity Available At All Times!
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Management Club Meets

NEENAH, Wis. — The management club of Badger Globe Mill, Kimberly-Clark Corp., held its monthly dinner meeting on February 14 at the Pastyme Club of Appleton with 40 members and two guests in attendance.

William Herriott, retiring president of the club, turned over the directorship of the club to the new officers elected at the January meeting. These were Arnold Krenkel, president; Walter Falck, vice-president; Dale Howe, secretary; and Norbert Hecker, treasurer. Ray Koehler remains as board member.

The name of the club was changed during the course of business from Badger Globe Foremen's Club to Badger Globe Management Club.

H. G. Boon spoke to the group on current items of the day associated with the paper industry. Mr. Boon is executive vice-president in charge of operations for the corporation.

Maine U. Names Calkin

ORONO, Me. — John B. Calkin, New York, has been appointed director of the Department of Industrial Cooperation, and associate professor of chemical engineering at the University of Maine. Professor Lyle Jenness who has been acting director of the Department of Industrial Cooperation will devote his full time to his duties as head of the department of chemical engineering.

From 1943-48, Mr. Calkin was coordinator of research for the Union Bag & Paper Corp. His earlier connections were with the Dennison Mfg. Co., Framingham, Mass., and the Brown Co. of Berlin, N. H. Recently, Mr. Calkin established himself in New York as a consultant to the pulp and paper and chemical process industries. He will continue to maintain offices at 500 Fifth avenue, New York City 18.

Va. Paper Employment Up

RICHMOND, Va. — Employment in Virginia's factories dropped in January to its lowest level since August 1946. This was true in all types of manufacturing industries with the exception of those engaged in the making of apparel and paper products. This is the information contained in a report released here last week by the State Labor Department in cooperation with the United States Bureau of Labor Statistics. Apparel and paper allied products industries recorded additional hiring.

Export Control Removed

OTTAWA—The Canadian Government announces that an Order - In - Council has been passed removing from export control caustic soda, glycerine and soda ash.

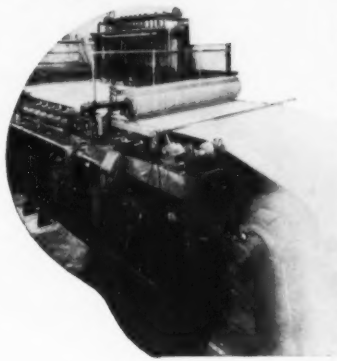
Ash to Fabricon, Chicago

NEW YORK—John P. Ash has been named Chicago representative of Fabricon Products, Inc. He was formerly associated with American Coating Mills.

Nobody ever saw or attempted to describe the beguiling Lorelei of the Rhine. Therefore we have as much right as anybody else to imagine how she might have looked. If her charm didn't include the attractions of a Valkyrie, it isn't our fault.—Editor's note.

Quality WIRE CLOTH

FOR THE MANUFACTURE OF PAPER



"No", say we, "no, sir (or madam)! We will not yield. We will *not* succumb to temptation. We will *NOT* consent to multiply production at the expense of quality." Since 1903 this has been our fixed policy. During that time all our effort, facilities and resources have gone into the task of improving Fourdrinier and cylinder wire cloth for paper making. Since the continuous betterment of Fourdrinier wire quality has contributed to the manufacture of better paper, we are all the more resolved to enlarge *our* contribution in the future.

THE LINDSAY WIRE WEAVING COMPANY
Serving the Paper Industry Since 1903
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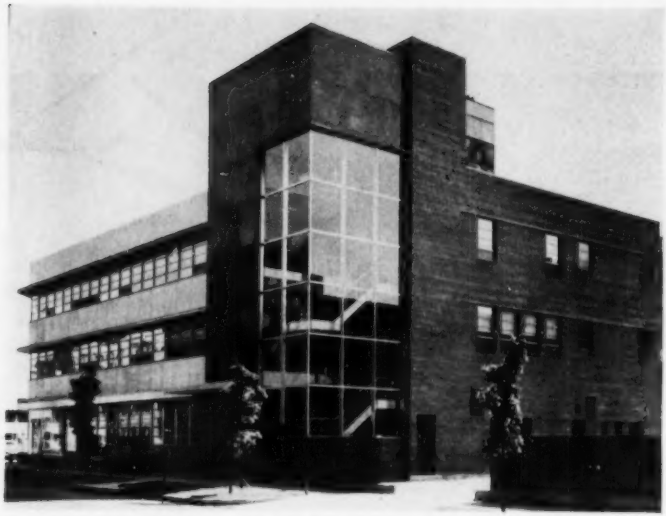


FORT WAYNE PLANT UTILIZES DAYLIGHT

Scientific daylight lighting is a feature of the new building of the Fort Wayne Corrugated Paper Co., at Fort Wayne, Ind. . . . A daylighted stair well is in sharp contrast to the dimly lighted stair wells of yesteryear's antiquated buildings. . . . This modern structure employs plate glass on corner sidewalls for three full stories. . . . Libbey-Owens-Ford Thermopane, an insulating window unit made up of multiple panes of glass with dry air sealed between, was specified for executive offices on the two upper floors. Other than being used to lessen heat losses, the insulating glass was specified as a sound-proofing agency, the building being located at a busy street intersection. The building has radiant heat and the two upper floors are air conditioned. Agate granite, stainless steel and brick are employed in exterior walls.

Comm'l Chem. Development

NEW YORK—The Commercial Chemical Development Ass'n., will meet at Hotel Roosevelt on March 16. Chairman of the morning and afternoon sessions will be Richard W. KixMiller, director of the product development department of the chemical division of the Celanese Corp. of America.

Morning session speakers are to be Dr. Henry F. Smyth, Jr., administrative fellow, Mellon Institute of Industrial Research, whose subject will be "Range Finding Tests—Toxicological Control in New Products Development"; and Dr. Louis Schwartz, consultant dermatologist, Washington, D.C., who will discuss "Dermatitis Among the Public from New Fabrics, Dyes and Finishes." Theme of the morning session is "Toxicological Safeguards in Commercial Chemical Development".

"Sales Promotion and Advertising in Commercial Chemical Development" is the theme of the afternoon session, when George King, assistant director of sales, Industrial Chemicals Department, Atlas Powder Co., will present "A Technical Sales Manager's Viewpoint"; Dr. Harlan Trumbull, assistant director of research of the B. F. Goodrich Co., will have for his topic "A Research Director's Viewpoint"; and Paul B. Slaughter, Jr., vice-president of House of J. Hayden Twiss will discuss "An Advertising Man's Viewpoint".

At the luncheon meeting John B. Calkin, consultant, New York City, will make the introduction and Dr. Paul C. Aebersold, chief, Isotopes Division, Atomic Energy Commission, will discuss "Development of the Isotope Distribution Program."

Mr. Calkin will officiate in the same capacity at the dinner in the evening, when Dr. Laurn B. Hitchcock, retiring president of the Association and vice-president of the Quaker Oats Co., will tell about "Putting New Chemicals to Work".

Allege Control Violations

WASHINGTON — Alleged violation of export control regulations involving caustic soda and soda ash for export to India led to suspension last week of export license privileges of the I. D. Talve Trading Co., of New York City, by the Office of International Trade, the Department of Commerce reports. A number of individuals also were affected by the action.

The announcement charged that the suspended concerns and individuals had altered the firm names on orders from foreign customers to the concerns involved, and substituted names of other concerns or individuals involving 22 foreign orders for more than 16,000,000 pounds of soda ash. It is alleged that the changed orders were then submitted to OIT, along with fictitious cables indicating acceptances of orders for about 448,000 pounds caustic soda.

Boosts Fuel Facilities

BUCKSPORT, Me. — To reduce transportation charges, the Eastern Corp. has just completed construction of a huge fuel oil storage tank and ship's berth here. The tank has 150,000 barrels capacity, and the berth will permit docking of the largest tankers.

Max D. Getchell, Eastern Corp. chief engineer, said the new facilities would reduce costs by eliminating use of small tankers and by permitting large tankers to pump out full cargoes. The corporation uses nearly 400,000 barrels of oil a year. The new facilities cost over $250,000.

The 42-foot high all steel, welded tank is on property of the St. Regis Paper Co. A 3,500-foot, 12-inch pipe connects with the old Eastern Steamship Co. wharf which has been converted to the new berth.

The oil will be trucked from Bucksport to the firm's South Brewer plant, 18 miles distant, and to the Lincoln plant. Mr. Getchell said small tankers might be used to service the South Brewer plant, which can be reached via the Penobscot River.

The first full cargo was pumped out on February 17. It was 120,000 barrels brought by the tanker *Paloma Hills* from Puerto la Cruz, Venezuela.

Goodrich Chem. Ups Five

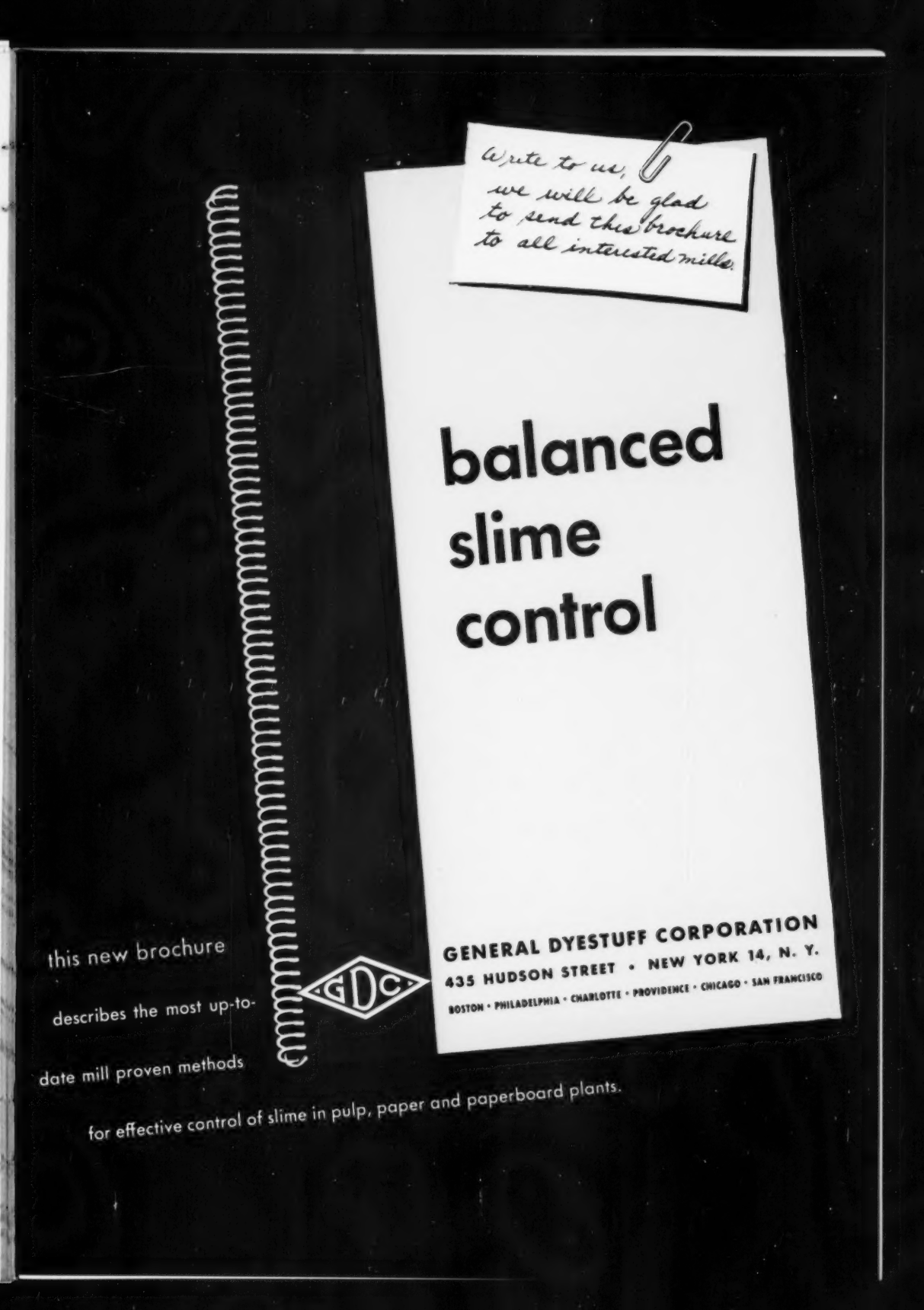
CLEVELAND — Five promotions in the sales organization of B. F. Goodrich Chemical Co. reported by J. R. Hoover, vice president of sales, are: Robert P. Kenney, formerly manager of the international sales department, manager of chemical sales, replacing S. L. Brous who has resigned to accept a position with the General Electric Co. Named successor to Mr. Kenney as manager of international sales is James C. Richards, Jr., formerly sales manager of Hycar American Rubber and rubber chemicals. W. D. Parrish, formerly technical service manager for Hycar and rubber chemicals, becomes the new sales manager of that department and is replaced as technical service manager by Roger C. Bascom, Hycar sales representative in the New England territory. Roger S. Steller has been appointed to replace Mr. Bascom in the New England area.

Macy Leaves Collins

PHILADELPHIA—Frederick E. Macy, president of the A. M. Collins Mfg. Co., resigned on February 11. Lawrence B. Kelley, formerly of Bellows Falls, Vt., has been elected executive vice-president. "It is confidently expected that operations will continue under his management," Wm. Hendrie Lloyd told *Paper Trade Journal* on February 15.

Sell K-C Issue

NEW YORK—Paine Webber, Jackson & Curtis announced that their secondary offering of 5,913 shares of Kimberly-Clark Corp. 4½ percent preferred stock has been completed.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describes the most up-to-
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for effective control of slime in pulp, paper and paperboard plants.

French Recovery

OTTAWA—J. P. Manion, commercial secretary for Canada in Paris, reporting to Foreign Trade, Department of Trade and Commerce, Canadian Government, says that the paper products industry in France show an average production of 94,000 tons in the first 11 months in 1948 against 97,700 tons in 1938. For the full year, he adds, production of paper and cardboard may be expected to be in the neighborhood of 1,130,000 metric tons.

Separate statistics for the production of newsprint have been just released for the period August to November, he continues, and do not appear to have been separately computed previous to that period. These show production of 14,000 tons in August, 24,000 tons in September, 22,000 in October, and 24,000 in November. These figures compare with an average of 23,000 tons in 1938 and 15,000 tons in 1947. If France maintains the level of the last three months, annual production may return to about 275,000 metric tons.

More Can. Asbestos

OTTAWA — The shipments of paper stocks of asbestos amounted to 7,003 tons in December, 1948, compared with 6,507 tons in December, 1947, and reached a total of 84,857 tons in the 12 months of 1948 as against 82,949 tons in the whole of the preceding year, the Canadian Government announces, revealing that total shipments of all asbestos by Canadian producers in December, 1948, amounted to 58,400 tons against 57,372 tons in December of previous year and totalled 714,333 tons in 12 months of last year compared with 661,815 tons in 1947. The report adds that Canadian exports of asbestos in 1948 amounted to 626,197 tons during the first 11 months compared with 578,209 tons in the corresponding period of the previous year. These shipments out of Canada included, in 1948, the following, with figures for 1947 in brackets: crude, 764 (933) tons; milled fibres, 211,502 (204,118); and waste, refuse, shorts, 413,931 (373,158).

Hammermill Union Contract

ERIE, Pa. — An agreement affecting production and maintenance workers of the Hammermill Paper Co. was signed on February 14 by representatives of the company and Local 12560, District 50, United Mine Workers. Under the agreement, the minimum base rate for female and male employes has been raised. Wage rates above $1.10 per hour remain unchanged. Other provisions of the contract call for a check-off of union dues, and three paid holidays, whether worked or not. The contract does not provide for a union shop. It extends from March 1, 1949, to March 1, 1951. Either the management or union may ask once after the first year to have the contract reopened for a discussion of wages only.

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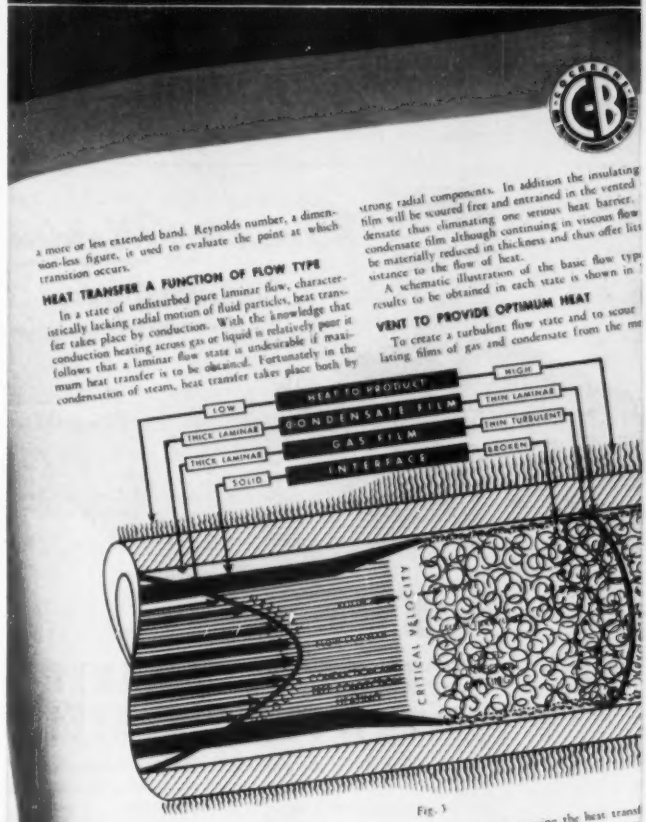

Fig. 3

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Western N. Y. TAPPI

TONAWANDA, N. Y. — The Western New York Group, Empire State Section of TAPPI, were the guest of International Paper Co. and the Robert Gair Co. for plant tours of these two mills on February 9.

Following the tours the members convened at the Cutts Hotel for dinner, about 70 men being present for the affair. George Rand, Jr., of International Paper Co., presided, and introduced to the group a former Eagle Scout of the Niagara Falls Troop, Robert McCarthy, who urged support of Scouting from groups such as this.

Principal speaker was Carl Clark of the Clark & Vicario Co., representing the Nash Engineering Co. He stressed the point that proper application of vacuum on paper and board machines has become increasingly important in recent years with the trend toward increase in machine speeds and touched briefly on all applications of vacuum pumps, answering questions from the floor on specific applications of particular interest to the men present.

Mr. Rand, program chairman, announced at the conclusion of the meeting that a meeting has been scheduled jointly with the Canadian Group for March 9 at the Prospect House in Niagara Falls, when a speaker from the Beloit Iron Works, Inc., will be present to discuss paper machinery development.

Remember Morden advantages

THE "STOCK-MAKER" IS A FIBER-BEATER

GIVING the maximum brushing, fibrilation, hydration and fiber length retention with minimum power, space and maintenance.

IMPROVING quality and increasing production through its controlled beating and refining action on a continuous flow basis — no batching or cycling required.

EXCELLING on sulphite, kraft, rag and mixed furnishes, making tissues, wrapping, bag, board, book, writing, glassine and other grades. Used either for 100% treatment or to supplement beaters and jordans.

PROVEN by hundreds in use over the past twelve years. Better than 50% repeat orders from users.

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New Infilco Process

CHICAGO—A new process of continuous causticizing has been announced by Infilco Inc., which makes use of the coagulating ability of magnesium hydrate which accelerates settling to produce cleaner liquors at a faster rate. The magnesium hydrate, which is formed from a magnesium salt, preferably the sulphate, effectively coagulates green liquor to remove iron and reduce silica.

Coagulation by the addition of a magnesium salt to both green and white liquors not only accelerates the clarification processes but also improves physical and chemical properties of both the muds and the liquors.

The amount of coagulant is readily adjustable so the entire process may be controlled to meet varying conditions.

Filtration may be employed economically to remove the last traces of suspended matter.

This process is designed to allow the use of smaller settling tanks which are free from internal moving mechanism, and each step in the process takes place within a separate tank. Centrifugals may be used both to separate cooking liquor from strong mud, as well as to dewater the final mud, as clarification and mud removal are entirely distinct, it is said. Unit functions of the process may be installed to operate with existing equipment to increase efficiencies and to improve the resultant quality.

U. S. Technical Studies

WASHINGTON — Technical studies of many products made from plastics, paper, and other materials, are under way at the Bureau of Standards, that agency reports.

"A program of basic research involving molecular weight determinations; properties of solutions; water vapor absorption, and electrical, optical and chemical properties of polymers is under way," the Bureau said. "These studies provide a common approach in determining the molecular structure and interpreting the behavior of many useful products made of plastics, rubbers, textiles, leather and paper."

Rochester Succeeds Uren

OTTAWA — Gordon H. Rochester has been appointed Timber Controller by the Canadian Government, succeeding W. E. Uren. Mr. Rochester has been Commodity Officer for the Lumber and Lumber Products Section of the Department of Trade and Commerce as well as the Assistant Timber Controller of Canada since 1945. He will be now responsible for regulating lumber exports under control. The controls were invoked during the war to see that sufficient stocks were retained in Canada for domestic requirements.

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BLEACHED SULPHITES
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BLEACHED SULPHATES
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Extralba Kraft, Extra White
Manila Kraft, Semi-Bleached

UNBLEACHED SULPHATES
Kraft "US"
Kraft "Z"
Kraft "Standard"

STORVIKS SULFIT AKTIEBOLAG

UNBLEACHED SULPHITES
Storvik "HS" Extra Strong
Mitscherlich
Glassine Mitscherlich

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Allen Addresses Sou. Forestry Conference

MONTGOMERY, Ala.—Despite the spectacular 15-year growth of the southern pulp and paper industry which has brought new wealth and resources to the South, the industry still is just in its infancy in relation to its potentialities, James H. Allen, vice-chairman and director of the St. Regis Paper Co., told the Southern Forestry Conference on February 18. He said pulpwood production in southern states approximated a valuation of $170,000,000 in 1948, compared to only $9,000,000 in 1933 when the upsurge of the pulp and paper mill expansion began.

Mr. Allen said the question has been posed whether the South will be overrun with timber in another 15-year cycle, to which he said, "I must answer most emphatically: No!"

"The market for wood fibre from the South is still in its infancy," he said, adding that "its potential markets in supplementing supplies in textiles with rayon; plastics from impregnated kraft paper for aluminum and steel, and paper containers in place of containers of other materials, have scarcely been entered."

With the increase in our own population, accompanied by a per capita yearly paper consumption of 357 pounds, and the fact that other nations are beginning to find increased uses for paper, the prospects for new and greater pulp and paper production in this southern area and throughout the country are bright, Mr. Allen said.

Maine U. Paper Course

ORONO, Me. — Max Getchell, chief engineer of the Eastern Corp., Brewer, Me., recently opened a new lecture series on pulp and paper mill equipment at the University of Maine.

Others scheduled to lecture are Fred Stetson, assistant chief engineer, Eastern Corp.; Parkman Collins, Parkman A. Collins Co., Boston; J. A. Stone, industrial division, General Electric Co., Boston; E. F. Tucker, vice-president, Stebbins Mfg Co., Watertown, N. Y.; C. B. Muzzy, sales engineer, E. D. Jones & Son Co., Pittsfield, Mass.; John D. Riley, district sales engineers, Boston; Charles S. Adams, assistant sales manager, Rice-Barton Corp., Worcester, Mass.; Anson B. Albree, Michigan Steel Casting Co., Detroit; Charles R. Huntoon, sales engineer, C. J. Merrill, Inc., Portland, Me.

Scheduled to lecture in a companion course in paper technology are Dr. F. B. Schelhorn of the Brown Co., Berlin, N.H.; Olin W. Callighan, salesman, Edgar Brothers Clay Co., Kalamazoo, Mich.; Fred B. Soderberg, director of paper service and development, General Dyestuff Corp., New York City; John Turbyne, beater room foreman, Hollingsworth & Whitney Co., Waterville, Me.; A. M. Lund, vice-president, Hudson Pulp & Paper Co., Augusta, Me.; Warren F. Daniell, superintendent, bureau of tests, Great Northern Paper Co., Millinocket, Me.; Dr. Frederick H. Frost, research manager, S. D. Warren Co., Cumberland Mills, Me.; Robert A. Bancroft, superintendent of finishing, Hollinsworth & Whitney Co.; Charles S. Huestis, mill manager, Robert Gair Co., Uncasville, Conn.; E. L. Lamb, director of research, Oxford Paper Co., Rumford, and Dr. Edwin Sutermeister, research chemist, S. D. Warren Co.

Can. Licensing Simplified

OTTAWA — Effective March 6, licensing arrangements for paper will be simplified in Great Britain, according to a report to Foreign Trade Service of the Canadian Government. As a result, paper for books, stationery, boxes, cartons and other minor uses should be freely available without individual licenses or quotas up to the full extent of the limits set by the supply position.

Under the new scheme, the report states bulk licenses will be given to papermakers and importers, authorizing them to deliver or convert any paper produced or imported by them with certain specific exceptions. In these exceptional cases the present practice of granting licenses against individual applications will continue. The principal types of paper in this category are: newsprint, wallpaper, sack kraft paper, insulating cable paper, grey felt paper, kraft linen board and other types of paper used for fireboard packing cases or double-backed corrugated board, and any paper used for the production of bags. Consideration is also being given to the position of building boards.

The existing restrictions on mill production and import license control over paper and board will continue, this report points out, while the use of paper for newspapers, periodicals, advertising, etc., will still be restricted by the Paper Control Orders. Price controls in Great Britain remain unaffected, it adds.

Business-Sales Address

BOSTON — Amor Hollingsworth, Jr., president of the Tileston & Hollingsworth Co., is to be a speaker under the topic of "Business-Sales," March 1, in one of a series of Harvard's 1949 Conference on Careers. The conference is to be held in Eliot House, Harvard University.

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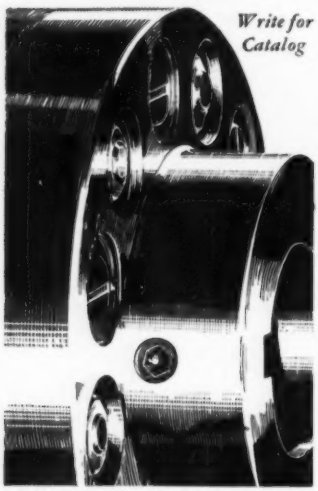

AJAX FLEXIBLE COUPLING CO. INC.
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Hollingsworth & Whitney Expansion

MOBILE, Ala.—The Hollingsworth and Whitney Co., on February 15 announced a $13,300,000 expansion of plant facilities in Mobile, designed to increase by half the pulp and paper manufacturing capacity and by 100 percent the bleaching capacity of its mill at Magazine Point.

At present construction is underway on a portion of this program estimated to cost $2,800,000. This includes a new million dollar water system which is about completed. Cost of the original H&W plant here is listed by the company at $6,000,000.

"The remaining and larger part of the program," according to Mr. Madden, "is estimated to cost an additional $10,500,000." He said that the aggregate of these expenditures exceeds the company's available funds and that consequently the contemplated financing is necessary.

Arrangements are being made with investment banking firms to form a syndicate for the underwriting of an issue of $8,500,000 of sinking fund debentures maturing in 20 years, and to market 61,510 shares out of the 100,000 shares of common stock, the issue and sale of which the stockholders have already authorized in March 1946.

YOU GET HUSKY, DEPENDABLE EQUIPMENT

with the new BJ double-duty Pulp Pump

NEWEST IN THE LINE OF BJ PUMPS	
Capacities	*400 to 4000 gpm*
Heads	*40 to 200 feet*
Sizes	*3"-4"-5"-6"-8"-10"-12"*
Stock Consistency	*Up to 6%*

TO INSURE CONTINUITY OF OPERATION, SPECIFY A BJ PULP PUMP. The new Byron Jackson *standard* Pulp Pump features dismantling and inspection of bearing bracket, impeller and liners, without (1) disconnecting suction or discharge piping or (2) removing the driver. Specially designed to handle high consistency pulp. This new pump is built for years of trouble-free service. Its large impeller eye keeps entrance velocity low. Flow is smooth and positive. There is no clogging. Constructed with an extra heavy case, oversized shaft, double row radial and thrust bearings, the BJ Pulp Pump handles up to 6 percent stock.

CONVERT TO ACID AND LIQUOR SERVICE, or vice versa. This double-duty Pulp Pump is easily converted from pulp stock service to acid and liquor service merely by changing a few parts. *For hot fluid services,* the standard Pulp Pump stuffingbox can be replaced with a water-jacketed stuffingbox. Where several BJ pumps of different sizes are used, interchangeability of group parts means smaller inventories, less down time and lower replacement parts cost.

OTHER DESIGNS FOR PULP AND PAPER INDUSTRY. The *standard* Pulp Pump is one of many BJ designs for pulp and paper pumping requirements. The BJ *Special-Duty* Pulp Pump, similar in design and construction to the standard line, has larger passages enabling these pumps to handle pulp stock of higher consistency.

BJ Screw Feeder Pumps will feed still higher consistency pulp into the impeller eye. The standard Pulp Pump will handle 5 to 7 percent stock when equipped with the Screw Feeder Pump. The Special-Duty Pump will handle 6 to 8 percent stock when so equipped.

For longer life, increased dependability, and greater flexibility, choose the new BJ Pulp Pump. Our new 12-page booklet on the complete line of centrifugal pumps for the Pulp and Paper Industry is soon to be available. Write today for your copy... no obligation, of course.

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Rothchild Discusses Pollution Control

NEENAH, Wis.—H. A. Rothchild, technical director of the Kimberly-Clark Corp., on February 2 reviewed the current pollution problems of the paper industry before 70 members of the company's Chemical Engineers' club at the Valley Inn. "Industry has known for many years that it must assume a share of responsibility for cleaning up the rivers of the state, and has acted accordingly. The present danger in the politically-inspired pressure to do so is that too-stringent regulations may force the companies to take unsound corrective steps and thereby endanger the future existence of the industry."

Rothchild, who has been a member of the Wisconsin Sulphite Manufacturers' committee on stream pollution for nine years, was introduced by Robert Stillings, program chairman of the club, as a recognized authority on pollution. He opened his discussion by describing the conditions peculiar to the Fox valley area with regard to the problem, which include several major ones in additions to waste sulphite liquor. A large factor, he said, is that of vegetable matter (weed and algae) that grows in Lake Winnebago and above and which floats down the river during certain warm-weather periods at the rate of 55 to 160 dry weight tons per day.

In telling of the 20-year study of the state pulp and paper mill pollution problems, Rothchild explained that there are over 1500 patents related to this matter, and a number of processes, all of which have been given consideration. He indicated that there are several ways in which sulphite wastes can be disposed of, but pointed out that unless Wisconsin mills adopted the right one, the increased costs involved would threaten the future security of the industry and the people it employs.

The principally-tried methods of disposal include the "magnesium base process", which has had recent wide publicity in state papers, the "evaporation and burning" process by which the liquor is dried and burned, an alcohol manufacturing process, the "ethyl vanillate" process, the "feed yeast" process, and others. In discussing these various processes, the speaker explained that the installation cost of some was prohibitive in existing mills, and that others did not give promise of being economically practical in view of now-known scientific facts.

The sulphite committee of the state therefore has directed its efforts along the "feed yeast" line, and have developed a large-scale pilot plant at Rhinelander to produce from the sulphite liquor a yeast product which will be widely useful. At present the output of the plant is being sold to producers of animal feeds, and it potentially a human food, with a high protein value and rich in certain vitamins. In support of his statement that the substance is very palatable, he passed samples around to the club members. The chemical analysis of the yeast is quite similar to that of the beef steak.

In spite of the feeling on the part of state and industry scientists that this offers the most promising solution of the problem, there remains much work to perfect the process and equipment needed to produce the yeast. The present yeast factory is quite new—it has shipped only four carloads of its product—and final decisions are not yet possible on just how commercial plants should be built.

During a question and discussion period following the talk, Mr. Rothchild indicated that many new substances have been developed which may prove of great value to medicine and to the food and drug industry.

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Pollution Control Progress Reviewed

KALAMAZOO, Mich.—"Current interest in stream pollution is but one manifestation of the fact that our country is approaching its saturation point from the standpoint of population."

This was the statement of Dr. Willis M. Van Horn of the Institute of Paper Chemistry, Appleton, Wis., in his talk on February 4 before the Technical Association of the Pulp and Paper Industry, at the Columbia hotel.

"Many years ago," Dr. Van Horn continued, "biologists predicted the United States would reach its normal maximum population about 1960. The units of any normal population compete with each other for the use of available natural resources.

"Among these are the streams and rivers and for their use the competition becomes more severe as the population approaches or passes its normal maximum. As population grows people become more and more aware of the circumstances of their environment—in the current situation the stream pollution problem."

The speaker reviewed the economic and industrial development of the country and its dependence on the use of streams. Other uses of these waters, such as for recreation, were also considered.

"The pulp and paper industry," Dr. Van Horn concluded, "has recognized its responsibility in this respect and has made great strides in solving its problem. Much remains to be done, however, and while the task presents many difficulties the industry confidently expects to place itself in a position where it can use the water without causing grounds for reasonable complaint."

Dr. Stephen Kukolich, vice chairman, who presided, had arranged for a brief panel discussion after the talk before the general discussion of the pollution situation opened. Members of the panel were four members of the Kalamazoo River Improvement Council which has been instrumental in getting preliminary plans made for construction of a commercial size water clarification plant at the Michigan Paper Co. mill at Plainwell.

Members were Jack Gilman, Allied Paper Mills, chairman; Dwight Stocker, Michigan Paper Co.; James A. Wise, Kalamazoo Paper Co., and Anthony Palladino, resident engineer in charge of the Plainwell project for the National Council for Stream Improvement and the six-mill valley group.

C-Z Snag Cutting

ASTORIA, Ore.—Bert Ross of Seaside, superintendent of Crown Zellerbach logging operations in Clatsop county, said on February 8 that his company is still getting pulpwood in the Tillamook burn region. "Clatsop county will be the most fireproof county in Oregon when Crown Zellerbach completes its snag-cutting operations near Elsie," he asserted.

South's Rail Shipments Climb

SAVANNAH, Ga.—Railroads operating in Georgia in the first half of 1948 handled 921,189 more tons of pulp, paper and paper products than during the same period of 1947, according to the U. S. Department of Commerce.

The total tonnage handled in the state during the first half of last year —3,143,406—was nearly 20 per cent of the 15,763,412 tons handled to and from points in the southeastern states including Georgia, Florida, Alabama, Mississippi and the Carolina, he said.

Shipments from points in Georgia last year totalled 1,868,936 tons, and 1,274,470 tons were sent to terminating points.

These shipments from points in the state were 444,031 tons greater than for the same period in 1947, and a decrease of 150,435 tons occurred in shipments to points in the state from the 1947 first half shipments.

The shipments included pulpwood, woodpulp, scrap paper, bags, newsprint, printing paper, wrapping paper, paper bags, paper and paper articles, paperboard, fiberboard, pulpboard, wallboard, building paper and prepared roofing materials.

Georgia was second among the seven southeastern states in total tonnage handled during the first half of last year, pressing closely to Florida's total of 3,335,872 tons.

The standings of others, according to tonnage, were South Carolina, 2,803,627; Mississippi, 2,126,642; Tennessee, 2,022,012; North Carolina, 1,840,432, and Alabama, 1,722,651.

Shipments to and from points in the southeastern states were approximately 27 per cent of the total handled in the United States and Canada, and of this total, 31 per cent originated at points in the seven states and the remainder were shipments to southeastern terminuses.

N'foundland Exports Climb

OTTAWA — Newfoundland, which is expected to become a part of Canada by March 31, exported newsprint and paper comprising 32 percent of all exports during 1948 compared with 28.6 percent in the preceding year and other exports of forestry products advanced to 6.9 percent of all exports as against 3.8 percent in the previous year, reports in Foreign Trade of Canadian Government, R. Campbell Smith, Commercial Secretary for Canada at St. John's, Newfoundland.

This report reveals that exports from Newfoundland of newsprint and paper products increased to $25,729,000 in 1948 compared with $20,735,000 in 1947 and of other forestry products reached $5,575,000 in 1948 against $2,740,000 in the previous year. Such exports of newsprint and paper products to the United Kingdom rose to $5,713,000 in 1948 against $2,874,000 in 1947; to Canada, $109,000 against none in the previous year; to United States, $13,015,000 in 1948 against $11,063,000 in 1947; to other countries, $6,892,000 in 1948 against $6,798,000. Exports of other forestry products from Newfoundland showed $4,835,000 to the United Kingdom in 1948 against $2,620,000 in 1947; $2,000 to Canada in 1948 against $2,000 in 1947; $322,000 to the United States in 1948 against $90,000 in 1947; $416,000 in 1948 to other countries against $28,000 in preceding year.

It is emphasized in this report that, whereas in 1938, the United Kingdom was the main market for Newfoundland's newsprint, 215,571 tons, and pulpwood, 103,811 cords, since the war there have been smaller shipments of finished newsprint, 55,018 tons, and more raw materials in the form of sulphite pulp, 37,747 tons, and groundwood pulp, 778 tons. Pulpwood shipments were somewhat lower at 81,922 cords.

Other shipments of newsprint in 1948 from Newfoundland included $2,131,795 worth to Mexico, $2,097,599 to Argentina, $1,666,044 Australia, $445,190 South Africa, $228,144 New Zealand, $216,739 India, $202,985 worth of pulpwood to The Netherlands, $128,967 newsprint to Ireland, and $182,618 pulpwood to Norway.

The two pulp and paper mills of Newfoundland have reported greater production of newsprint and pulp this year combined with a price increase, Mr. Smith reports to Foreign Trade.

Davis Raft Origin

VANCOUVER, B. C.—Davis rafts have become extensively known in the logging industry, particularly on the Pacific Coast, but there are probably comparatively few who know that Otis G. Davis, who invented the Davis raft in 1909, is living in semi-retirement here, near the University of British Columbia.

Mr. Davis was born at Chehalis, Washington, in 1882, and at the age of 14 started greasing skids on the banks of the Chehalis River in the days of ox-team logging.

In 1907 his brother asked him to take over his logging industries at Jervis Inlet, B. C. Two years later he went to the West Coast of Vancouver Island to become superintendent for the British Canadian Timber Company at Port Renfrew. Logs were shipped in flat booms by sea by this plant to mainland mills, and in heavy water a great many logs were lost.

An experiment that Davis and his brother had worked on down in Washington made him feel that he could overcome the difficulties. To make a raft, they had set one long sidestick at each side, placed their heaviest logs in between and laced them together in what was termed a chain-weave design. The brother thought it would take too much wire so they loosened it. By so doing they were able to pile more logs on top. These sank in the middle, leaving the side sticks on the surface. On this basis Davis planned to build something heavy enough to withstand the pounding of rough seas. Thus, the Davis raft was born.

He left Port Renfrew in 1913 to supervise the building of rafts for towing to Pacific Mills at Ocean Falls. During the war he was back on the coast and in 1918 went to the Queen Charlottes to build rafts for the Munitions Board.

By this time logging companies right along the coast were anxious to have their men trained in making rafts. For the next eight years Davis traveled north and south along the coast.

In 1927 the patent, which he held jointly with his brother, expired so a year later he returned to B. C. and became superintendent of Earle & Brown Timber Company at O'Brien Bay.

Mr. Davis' invention is now playing a big part in salvaging. The logging divisions of pulp and paper companies are picking up deadfalls on the Queen Charlotte Islands, something unheard of until recently, and packing them in the middle of their rafts.

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High Court Backs U. S. In Wage Test

WASHINGTON—The Supreme Court ruled on February 15 that the Federal Wage-Hour Administrator may use a civil contempt action to force an employer to pay back wages which the administrator contends were unlawfully withheld.

Justice Douglas delivered the 7-2 ruling. Justice Frankfurter wrote the dissent, joined by Justice Jackson.

The ruling specifically affects the Jacksonville Paper Co. of Jacksonville, Fla.

A United States District Court in 1943 enjoined the company from violating the minimum wage and maximum hours provisions of the Federal wage-hour law. Three years later the administrator asked the District Court to hold the company in civil contempt on the ground that it used various practices to violate the law.

The District Court found violations by the company. It said, however, that since its earlier judgment had not pointed specifically to any particular practices as illegal, the court could not find the company in contempt.

"To constitute civil contempt," the District Court said, "there must be some evidence of a willful and intentional violation of a court order."

On this point, Justice Douglas stated for the majority that: "The absence of willfulness does not relieve from civil contempt." Since the purpose of the decree by the lower court was remedial, "it matters not with what intent the defendant (Jacksonville Paper Co.) did the prohibited act," he pointed out.

Justice Douglas added that the Jacksonville Paper Co.'s "record of continuing and persistent violations of the (wage-hour) act would indicate that the (lower court) decree was wholly warranted in this case."

Justice Frankfurter's dissenting opinion criticized the lower court's order for not being definite.

"Courts should be explicit and precise in their commands and should only then be strict in exacting compliance," he stated. "To be both strict and indefinite is a kind of judicial tyranny."

"Today's ruling happens to concern an injunction against an employer," Justice Frankfurter stated. "Tomorrow it may be an injunction against employes, as it was yesterday and too often in the past. One of the grievances which led to the Norris-La Guardia Act was the generality of the terms of labor injunctions. Ambiguity lurks in generality and many thus become an instrument of severity."

The U. S. circuit court in New Orleans had upheld the district court, causing the administration to appeal to the Supreme Court. He said in the appeal that "unlike a criminal contempt proceeding, purpose of the present action is not to punish but to coerce the company" into paying back wages.

The company, in opposing the administrator's contentions, said Congress had expressly given employes and their representatives the right to sue for back wages. By doing so, the company said, Congress has denied that right of the wage-hour administrator to seek such relief for employes.

Justice Douglas, however, ruled that this point "is not material." It is the power of the court with which we are dealing—the power of the court to enforce compliance with an injunction which the act authorizes."

Marion Heads Dairypak

HAMILTON, Ohio — Clarke Marion, vice-president of the Champion Paper & Fibre Co., has been made president of Dairypak, Inc., a company which processes and sells paper milk bottles, with plant and offices in Cleveland. Dairypak is owned jointly by Champion and the Gardner-Richardson Co., of Middletown.

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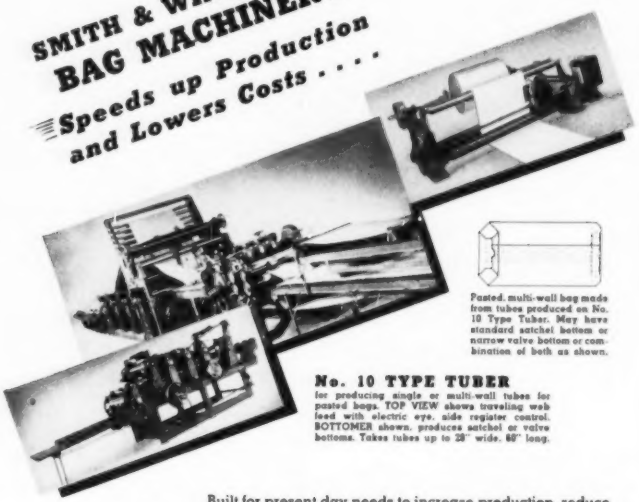

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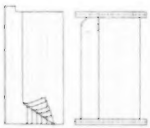
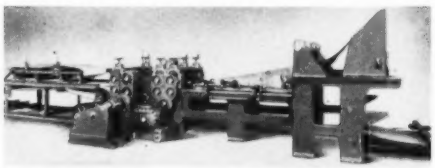


Multi-wall, sewed valve type, gusseted tube made on Smith & Winchester Multi-wall Tuber.



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Trends

(Continued from page 77)

Waste Paper

Impact of the expanded wood pulp supply on the waste paper industry was sudden and devastating. More available wood pulp meant less need of waste paper; insistent consumer demand for quality paper and board involved more wood pulp, less waste paper. To a market already well-stocked with all grades of waste paper, and with unabated supplies flooding in after a closed winter, the sudden shift in condition was disastrous. Prices of low grades started a precipitous coast, higher grades followed, nor stopped when severe financial losses were incurred by dealers. So vast were unwanted supplies, so serious the problem of disposal that dealers were reported to have given stocks of *mixed* to mills. (For concise review, see U.S. Dept. of Commerce report elsewhere in this issue.) Indication of price leveling is shown in Table A on representative grades.

Considerable improvement has been shown since the first of this year in pulp substitute grades, indication of shortages of sulphite pulp at prices the mills were disposed to pay. Prices have firmed on the higher grades and a degree of stability is reported in this part of the market. Currently, industrial and office buildings are paying for removal of mixed papers; overstocks are being dumped or burned. Readjustment from war and postwar conditions is said to be shaping slowly but definitely. Leading dealers believe a few months will see the waste paper industry stabilized again.

Cottons

Augmented supplies of wood pulp had reacted on the cottons market via rag content papers by early summer of 1948. Sulphites appearing in heavy volume began a retake of their market lost to rag contents during wartime shortages. Diminished demand for rag contents forced production cutbacks on these mills, sharp reduction of cuttings inventories, and almost a cessation in purchasing. Simultaneously, the garment industry's dull period set in with a diminution of cutting. Supplies of new cuttings became as limited as paper mill buying, so that prices remained firm on an idling market, finally softening moderately to dealer lows of $10.25 and firmed at $10.375. Assistance to the firming was given by substantial (private) purchases of white shirtings for Britain at a premium price over going domestic, it is reported. (See Table B).

Diminished demand for old rags gently softened these prices, also. Supplies appeared in such meagre amounts, however, that the market was kept in balance most of the year. Roofing rags alone showed marked downward trend from early year highs of 2.00c to 1.25c at the year's end. Current market tone is dull with adequate supplies to meet light demand. ECA purchases of 1300 tons of old cottons, and a similar quantity of old woolens, for Japan is said to have given relief to domestic oversupplies of lower-bracket rags.

For most of the year, the old bagging market was strong with prices firm. Weakening was noted in early winter, however, and the present soft undertone is expected to prevail until early spring.

Indexes

Index of general business activity for the week ended February 12 eased to 150.7 from 150.8 in the preceding week, compared with 149.7 for the corresponding week of 1948. Index of paperboard production fell to 175.1 from 177.7 in the preceding week, compared with 182.4 for the corresponding week of 1948.

Comparative ratios of U. S. paper and paperboard production to mill capacity, as reported by AP&PA are:

	Feb. 12	Feb. 5	Feb. 14	Feb. 15	Feb. 16
	1949	1949	1948	1947	1946
Paper**	95.0	93.8	100.4	104.5	95.0
Paperboard ..	86.0	87.0	101.0	102.0	94.0

** Capacity in tons, 1949, 172,623; 1948, 172,058 tons.

Paperboard Production (Tons)

	Feb. 12	Feb. 5	Feb. 14
	1949	1949	1948
Production	177,390	180,379	183,376
New Orders	155,095	220,321	158,637
Unfilled Orders ..	319,065	343,983	450,393

Percent of Activity, Current: 86%; Year, 87%.

Albany Dedication

ALBANY, N.Y. — The International Brotherhood of Paper Makers (AFL) will dedicate its new headquarters building at Wolfert avenue and North Pearl street on February 25.

"THILMANY PAPER MILL MAGIC" SCREENED

S. Walter, Inc., Philadelphia, and its two branches, the Andrews Paper House, York, Pa., and the Lehigh Valley Paper House, Allentown, Pa., held a general sales conference at the Pen and Pencil Club in Philadelphia on February 2 . . . A feature of the gathering was the screening of the film, "Thilmany Paper Mill Magic", presented by L. R. Graef, eastern representative of the Thilmany Pulp & Paper Co.

Mrs. Perkins' Will Filed

HOLYOKE, Mass.—All of her stock in the American Tissue Mills and in B. F. Perkins & Son, Inc., manufacturer of paper-making machinery, will be divided in equal shares among her three children, according to the will of the late Mrs. Malvena E. Perkins, whose will was filed for probate on February 19 in the Hampden County Registry of Probate in Springfield.

The children: Benjamin F. Perkins, president of American Tissue; J. Lewis Perkins, Jr., president of B. F. Perkins, and Mrs. Marion (Perkins) Duryea, also will inherit the residue of the estate in equal shares, as well as receiving certain other specific bequests.

Specific bequests to relatives and employes were numerous. Mrs. Duryea will inherit all fo her mother's stock in the White & Wyckoff Mfg., Co., the Holyoke Water Power Co., New England Telephone & Telegraph Co., and General Motors, as well as any income from her father's insurance that can be willed, and a Cadillac automobile and other personal possessions. The sons will divide other items of personal property.

Fire Loss Insured

EAST HARTFORD, Conn.—Fire is reported to have caused damage estimated at more than $30,000 when it swept through a section of the Case Brothers Paper Mill on Burnside avenue on February 15.

Officials at the plant said the damage was covered by insurance.

Jansen Heads Corporation

CHICAGO—George D. Jansen is president of the Jansen Corp., handling sanitary food paper packages at 11325 Parnell avenue. Mr. Jansen was formerly with the Sealright Corp.

The National Economy

(Continued from page 56)

rest of the world; (4) To provide large and increasing public works; and (5) To provide a constantly enlarged social welfare program.

It is to be noted that these are stated as demands for production (not for dollars) which implies a recognition that such demands can *only* be met out of production. Such a recognition (if the analysis is correct) is in itself a hopeful sign.

At the same time the public seems not to know, nor to have interest in, whether industry has the facilities to meet these demands, and at the same time provide a reasonable real income for its owners.

As a contrast to this analysis, it is to be noted that the current worry of industry, with the possible exception of steel, certain non-ferrous metals, and part, *though not all*, of the automotive industry, is whether the demand for goods will be sufficiently large to occupy present capacities—much less further increased capacities. It is argued that this is basically a continuance of the 1930's depression psychology, that it gives little effect on the evidence of a much longer period that the American people are constantly developing new types of demand and that in substance each of these new demands is superimposed upon prior demands. (A simple example intended only as an analogy is the fact that while perhaps per capita use of wheat and potatoes has dropped, per capita consumption of oranges, meats, etc., etc., has enormously increased. Incidentally, these new uses seem to require more paper than the old ones did.)

If we accept this analysis as sound, we must conclude that industry will be compelled to meet these demands; for society (industry in some instances, government in others) finds a means of translating the demands of an overwhelming majority of the people into action. This might occur regardless of the short run effect on the ability of industry to meeet them and at the same time pay a fair return to owners. This would spell then a renewed production at near capacity rates by all industries which in turn would necessitate high and sustained production of all types of paper, board, and converted products. In this respect, we will share with all industry the effect of public demand.

It must be obvious, however, that in the long run to meet such demands there must be fair returns to the owners of business. It is of interest on that point to note that regardless of attacks upon profits, the department of government most familiar with our business has recognized our price structure as conservative.

In the January Review by the Department of Commerce, it is pointed out that while prices have advanced fairly gradually since 1945 to a high index number of 188.9, this—*and I quote* "was well below the average index for all commodities or for manufactured products." It was also noted that prices of European pulp were not included in the index (though they are part of our costs), and it was stated that if they had been included, the index would have been higher and the average increase greater.

Finally, for what it may be worth—it was stated that it was very unlikely that pulp prices will ever again touch prewar level relationship to paper and board.

After a year as President of the American Paper and Pulp Association, I would like to report to you regarding that organization's service to and representation of the pulp and paper industry. A great many of you know me well enough, I believe, to recognize that as President of the Association I am not content just to believe that its service is worth while, but that I would want to know of any defects in serving the purposes for which it was organized and because of which it is now supported by the industry.

One of the basic functions of the American Paper and Pulp Association is to assure an informed industry. Under any conditions this is a slow and laborious process. I am encouraged to think that, ranging all the way from rather intricate statistical correlations to labor relations matters, the Association is placing in the hands of its member companies essential basic material. Further than that, I believe that most, if not all, executives in the industry now recognize the desirability, if not the necessity, of reasonable familiarity with factors that influence industry trends and conditions.

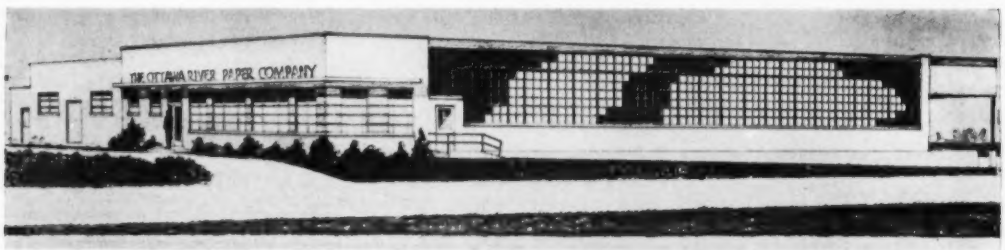
Moreover, with the growth in size and importance of the paper industry, the information available in the Association has become an increasingly important factor in obtaining intelligent consideration of the industry's economy on the part not only of industries dependent upon its products, but also of the financial community.

Much time and effort has been directed to a better understanding on the part of the executive branches of the government. Beyond this information of a general and continuing character, the Association has been currently involved, during 1948, in projects that mean much to the industry's general welfare. I have recently reviewed a list of six of these immediate projects, varying all the way from the industry's position and its presentation with respect to increases in freight rates requested by the carriers, which involve many millions of dollars that the industry would be required to absorb, to the effective cooperation of the industry with the National Security Resources Board in its war mobilization planning.

Each one of these projects has required the formulation of a carefully developed plan and the effectuation of that plan. In every case the policies that were followed were approved by the Association's Board of Governors and, as to the general administrative action, by the Executive Committee.

I would like to say two things with regard to the Association's work. First, the Executive Committee and the staff welcomes all constructive criticisms that will improve the Association's effectiveness in the industry's behalf, always within proper legal limits. Sec-

NEW OTTAWA RIVER PAPER CO. PLANT TO BE BUILT IN FLINT, MICH.



A change in site to Flint, Mich., and a $100,000 expansion of manufacturing facilities of the Ottawa River Paper Co., were disclosed early this month by Philip LeBoutillier, Jr., Toledo, Ohio, president of the firm. . . . The addition pictured above will be added to the structure now on the five-acre site at G-4349 South Dort highway. . . . Construction is expected to begin about March 1 and will take about 90 days. The new plant will employ about 40 persons and produce some 6,000,000 square feet of corrugated cardboard a month.

ond, I recognize very well that in matters involving the general industry welfare, to which the activities of the industry's parent association are confined, it takes good industry citizenship and a degree of statesmanship to maintain appreciation of the importance of these problems and the necessity for the Association's support.

However, I believe that the past 20 years has brought, in the pulp and paper industry, great growth among the executives of the industry in statesmanship and industry-consciousness that assures acceptance of the Association as a working tool vital to the paper and pulp industry's welfare.

Pittsfield Gets Green Light

PITTSFIELD, Mass.—The State Public Works Department disclosed on February 15 that it will begin flood repair work in the Northern Berkshire area immediately, as the result of action by the Massachusetts Legislature in appropriating $2,000,000 for the emergency project.

William Hurley, assistant engineer at the Pittsfield office, said he believed Commissioner William F. Callahan would sign contracts at once for the reconstruction of retaining walls which were badly damaged in the New Year's Eve flood which caused considerable losses to Western Massachusetts paper mills.

Meanwhile, Senators Michael H. Condron (D-Pittsfield) and Ralph Lerche (R-Northampton) expressed satisfaction that the $2,000,000 bill for Western Massachusetts flood relief has been signed into law—but they foresee a few difficulties.

Senator Condron warned "someone will have to go to Washington and get federal funds for construction of dams to control these flood waters."

Senator Lerche said that although the appropriation would not replace the flood damage, it would put streams in shape to withstand any repetition in the spring.

Commissioner Callahan, in urging enactment of the legislation, had told Bay State solons that industry in general, and the paper industry in particular, faced tremendous losses in the anticipated spring freshets unless the emergency work was done immediately.

Would Open Record

CONCORD, N.H.—Because a "considerable number of interested parties feel that they did not have an opportunity to submit evidence," Governor Sherman Adams feels that the Wilder Dam record should be opened, it was reported on February 19.

In a statement issued by his office, Governor Adams noted there had been a "complete opportunity" for any "public parties interested therein," to submit evidence at hearings and conferences, which had been well-attended by the Granite state's paper manufacturing interests.

He also noted that parties dissatisfied with the decision of the Federal Power Commission might have appealed to the court.

"No one exhausted this remedy," the governor reported.

Despite these facts, Governor Adams said it now appeared many persons—among them paper mill owners—wished to be heard, and that he saw "no valid reason" why they should not be granted the opportunity.

The New Hampshire Senate's Committee on Public Works has just completed public hearings on a joint resolution which calls upon Congress to order a rehearing on the dam before the Federal Power Commission.

Hogback Dam Progress

HARTFORD, Conn.—Representative E. Welles Eddy of Newington, told paper manufacturers on February 16 that he was confident the bill authorizing construction of the Hogback Dam will be passed by this session of the Legislature.

"Since the opening of the session," he said, "I have found the plan has friends in all parts of the state. There seems to be a widespread feeling that the water needs of the Hartford area have reached the point where further delays in the Hogback Dam are no longer justified."

Mr. Eddy added that the new bill contains safeguards for the protection of the interests of Litchfield County, so that some of the opposition there has died down.

"Several people who were active in opposing the bill two years ago have told me they feel now that the Hogback bill in its present form should be passed," Mr. Eddy said.

The Newington Representative, who is also chairman of the Metropolitan District Water Bureau, said the chief new feature of the Hogback bill is the prohibition against any further development by the District of the West Branch of the Farmington River.

Va. Forestry Demonstration

BUCKINGHAM, Va.—A forestry demonstration was held here on February 16, under the direction of Howard Doyle, of the Southern Pulpwood Conservation Ass'n.; Forrest Patton, of the Agricultural Extension Service; and members of the Farmville district, Virginia Forest Service. A thinning demonstration was followed by a selective cutting demonstration with emphasis on leaving an adequate seed source. Recent developments in forest management also were demonstrated.

300th Anniversary

EYNSFORD, England — The Eynsford Paper Mill recently celebrated its 300th anniversary. Eighteen craftsmen and pensioners with a record of 40 to 60 years' service were among the 200 employes and friends at a dinner and concert at Eynsford Village Hall. Of the pensioners present, Arthur Bryant with 61 years of service, held the record.

Abitibi Expansion Proceeds

TORONTO—The Abitibi Power & Paper Co., is making steady progress towards completion of its vast expansion program, but plans for the extension of the program are also well under way. Major expansion projects of Abitibi and its subsidiaries are being pushed as fast as materials supplies will permit. General Manager D. W. Ambridge reports further expansion and improvements at the Sturgeon Falls, Ont., plant, and a start made on the erection of a chemical plant unit with the Carter Construction Co., as general contractor.

Abitibi engineers have just completed a survey of the pulp and power resources in the Prince Albert district and further developments will depend on reports made by W. D. Sandborn, Abitibi's chief electrical engineer, and J. G. Mathews, chief forester.

Among potential power sites inspected during the survey, the Fort a la Corne area on the Saskatchewan River, 40 miles east of Prince Albert, previously mentioned in connection with other hydro development proposals, is regarded as most favorable.

Great Northern Deadwater

ASHLAND, Me.—The Great Northern Paper Co., is putting the finishing touches on piers across the deadwater above Clark's Shore here. The deadwater will be used as a holding ground for the Aroostook River pulpwood. Bathurst booms will be strung between the piers and the holding ground will be large enough to care for any size cut the company may make in the future. This new holding ground is in addition to the one now in use at the loading plant at Sheridan.

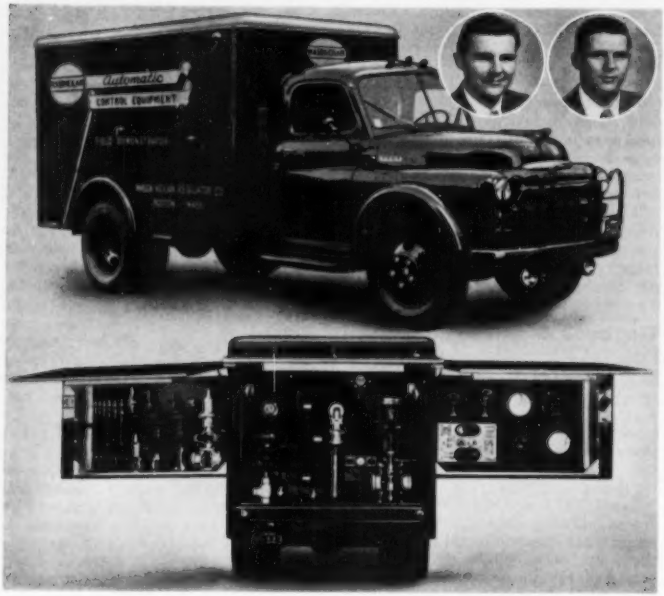
Pulpwood hauling in this section is about completed. The socalled farmers' wood is nearly all parked along the rivers or at sidings. T. S. Pinkham has hauled about 27,000 cords and farmers' wood totals about 24,000 cords. Most of this will all be floated into the Aroostook River.

Tug Sudbury Commissioned

VANCOUVER, B.C.—The converted tug, Sudbury, of the Badwater Towing Co., Ltd., valued at $250,000, was commissioned on January 14. The towing company is a subsidiary of Pacific Mills, Ltd., P. E. Cooper being president of both companies, with T. B. Jackson vice-president and general manager of the towing company. The Sudbury will be used mainly for towing logs to Pacific Mills' plant at Ocean Falls from logging camps along the coast.

Captain S. Salverson, master of the ship, has been with the company 16 years and has been plying the coast for some 40 years.

Following are the measurements, etc., of this tug: Gross tonnage, 892; Length, 193½ ft.; Beam, 33 ft.; Draft, 18 ft.; Horse power, 2,750. It has two Scotch boilers, 225 lbs. W.S.P. (4 cyl.).



FIELD DEMONSTRATOR ON NATION-WIDE TOUR

Mason-Neilan Demonstrator touring South, Southwest, Pacific Coast, Rocky Mountain and Central States and New England. . . . An air compressor is an integral part of the Demonstrator, permitting much of the equipment to be in actual operation; and the effectiveness of the demonstration is enhanced by the use of cut-away models. Fluorescent lighting is included for indoor and night-time demonstrations and a public address system has been provided. . . . The demonstrator illustrates Mason-Neilan pressure regulating valves, air-operated diaphragm control valves featuring percentage flow characteristics; control valve positioners; pneumatic pressure switches; pressure and temperature controlling instruments, both indicating and recording. . . . Charts detail air circuits of the various controllers. . . . The outfit is in charge of James J. Hourihan Jr., (left circle) assisted by John R. Redgrave (right circle).

Anilox-OS Introduced

NEW YORK—IPI has announced development of Anilox-OS "a new and different" aniline-type ink for conversion of porous stocks by aniline and anilox methods.

The solvents in Anilox-OS are also said to bee hydrophobic and therefore repelled by the moisture content of porous stocks. This action accounts for the reported extra mileage by tending to keep the ink on top of the stock, it is stated. With this new ink, the makers believe that they have opened a new era in the field of low-cost printing by aniline-type presses.

Lockport Felt Election

NEWFANE, N. Y.—At the recent annual meeting of Lockport Felt Company, stockholders the following were elected directors of the company for the ensuing year: William H. Lee, Elizabeth M. Lee, Raymond J. Lee, Lester D. Carner, William W. Campbell, Jr., William E. Miller, Bertram A. Audley, Lester J. Robinson, all from Niagara County, and Roy T. Yates of New York City.

At the Director's meeting which followed, the following officers were elected: William H. Lee, chairman of the board and president; Raymond J. Lee, executive vice-president; Elizabeth M. Lee, first vice-president; Bertram A. Audley, second vice-president in charge of sales; Lester D. Carner, secretary; Edna Wilson, assistant secretary; Raymond J. Lee, treasurer; and Bertram A. Audley, assistant treasurer.

C. J. Price was appointed comptroller, and William E. Miller, corporation counsel.

In William H. Lee's report to the stockholders he outlined improvements made by the company during the past year and stated that the company was going ahead with a further building and modernization program which would entail additional expenditures of $100,000 in addition to the $117,000 spent during 1948.

Timken Personnel Changes

CANTON, Ohio—Seward T. Salvage, assistant district manager of industrial bearing sales in the Cleveland office of the Timken Roller Bearing Co., has been made sales promotion manager with headquarters in Canton.

T. F. Rose, Cincinnati branch manager of the service sales division, has become manager of Timken Roller Bearing Service and Sales Ltd., succeeding the late C. E. Webster.

H. C. Telford, assistant manager of the Atlanta branch, becomes the new Cincinnati manager.

Brown Personnel Changes

PHILADELPHIA—Warren W. Matlack has been named industrial manager of the New York City branch of Brown Instruments division of Minneapolis-Honeywell Regulator Co., succeeding O. B. Wilson, now regional sales manager for the east, central and southeast; Devon W. Fryback has been appointed district manager of the Albany, N.Y., office; D. Lyle Russell has been made industrial manager of the Hartford, Conn., district office; and Herman Hoyler has been named industrial manager of the East Orange, N.J., district office.

Paisley to Exhibit

CHICAGO—Applications for its adhesive products will be shown at the 1949 AMA Packaging Exposition in Convention Hall, Atlantic City, May 10-13, by the Paisley Products, Inc. The following personnel will be in attendance during Exposition Week: J., P. B., and J. B. Morningstar, M. Stemple, Earl C. Lenz, L. J. LaBrie, D. Bookshester, J. Ranft, M. F. Lenz, A. Berk, E. Bearman, S. Schuller, Harry S. Miller, C. J. Leggett, S. Stewart, and M. Hillary.

Johnson Norton Vice-Pres.

WORCESTER, Mass.—Ralph M. Johnson has been appointed vice-president in charge of sales of the Norton Co. He was formerly vice-president and general sales manager for the company's abrasive division. Mr. Johnson joined Norton in 1915 as a research chemist. He is an executive committee member of the American Supply & Machinery Mfr.'s Ass'n., Inc., and heads that organization's Marketing Methods Committee.

Pressure Drop Chart

DETROIT—The Wright-Austin Co., 315 West Woodbridge street, has published a chart that enables one to quickly select the most efficient sinze and type of steam separator for a specific installation and determine the pressure drop through the separator. Included also as a part of the chart is a method for determining the pressure drop on an oil separator for an exhaust steam line.

Goodrich Names Conner

AKRON, Ohio—Chester F. Conner has been appointed manager of the industrial products sales department of the industrial and general products division of the B. F. Goodrich Co.

Murphy Taylor Adv. Mgr.

CHICAGO—R. W. (Pat) Murphey has been named advertising manager of the Taylor Forge & Pipe Works.

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The Traffic Angle

By EDWIN CHESTER HASTINGS
Edwin Chester Hastings Traffic Service, Pittsburgh, Pa.

Army-Navy-Air Force Nomenclature

Future shipments of paper products to Army-Navy-Air Force should be according to the custom now standard for the military divisions of the government. Recently these bureaus issued new freight classification guides to provide correct terms to be used where freight billing is concerned. Descriptions on the bills-of-lading should be as desired by the government on all shipments of quartermaster items for which the military establishments or its cost-plus contractors pay freight charges. This includes lading of suppliers to the departments. An important point in the government instructions is the difference of descriptive terms used in the military guide as distinguished from the rail and motor freight classifications—both are to be shown on the bill-of-lading. While it is agreed shipper/government dealings overburden the supplier with details, yet to avoid part of the 'headaches' where documents are returned for more complete information, the QM offices should be able to supply proper instructions. (See *Paper Trade Journal*, February 3) page 55, column 1.

Shipper-Receiver-Carrier Meeting, February 24

The American Trucking Associations extended an open invitation to "all interested shippers" to attend the shipper-receiver-carrier meeting in Hotel Claridge, St. Louis, on February 24. Purpose: To consider problems of motor freight claims; opportunity to discuss problems encountered in handling claims with the carrier. Criticism that will improve claims handled by truckers is welcomed from shippers/receivers, also suggestions on how to prevent claims. There have been many complaints concerning the truckers on the lax way they treat the shipper's claim. Sometimes months will pass before the shipper gets an answer and this usually only after he sends several letters of protest.

Demurrage Charges

Common carriers expect the shipper to observe tariff instructions to avoid expensive penalties on freight transactions. It may be of interest to note that a rail carrier recently had to return $10,000 to a shipper. The refund represented demurrage charges paid by the shipper and the amount had to be returned for the reason that the carrier failed to adhere strictly to a tariff rule.

A Pennsylvania box firm has a plant siding that will hold several cars. On occasions the spur becomes congested and due to this condition, demurrage charges are paid. The $10,000 returned to the firm represented charges that accrued on cars held in the rail-yard.

When the carrier notifies the consignee that carloads await delivery but that delivery can't be made because of the loaded siding, these cars are placed on a rail-yard track for future switching to the plant. When this is done, it is known as "constructive placement." With the notice to firm, time begins the following day at 7:00 A.M., and after 48 hours from that first 7:00 A.M., demurrage charges are assessed. The notice to the shipper from the rail agent must be written, and mailed, as the postmark governs in disputes as to time of sending. This method is the proper custom according to the tariff rule. In this case, the controlling demurrage tariff is B. T. Jones, 4-Y, ICC 3963, PSCNY 267, Pa. PUC 314 and the rule is—a written notice of readiness to deliver cars to the consignee. The $10,000 recovery rested on this fact, the carrier failed to follow the tariff rule, in that an *oral* instead of *written* notice had been given of the constructive placement of cars in the rail-yard. The "oral notice" arrangement had been an agreement between the rail agent and plant supervisor. It was very simple—a phone call made and cars placed—but also very expensive for the rail carrier. The method allowed no actual check, because verbal information, where records are concerned, can't be properly accurate. The written notice from the carrier when received at the plant can be checked daily, whereas oral notices are many times forgotten before a check is made.

Demurrage charges are not (as is sometimes believed) a source of revenue to the carrier; they are *penalty assessments* for detention of equipment beyond a reasonable time allowed for loading/unloading.

How the principle of demurrage came into practice and why the penalties are assessed against the shipper/consignee may be clarified in the following:

In the early days it was a common custom for consignor/consignee to hold cars for loading/unloading for any length of time that suited convenience. As commerce increased, the demand for cars placed the carriers in a peculiar situation; they were frequently unable to fill car orders. As common carriers they were obliged to furnish cars for the movement of the freight of all shippers, and holding equipment on the basis of "convenience" made it difficult for them to discharge that obliga-

LEISER HEADS WEST COAST MILL MEN

Jack Leiser (left) newly elected president for 1949 of the Paper Mill Men's Club of Southern California, Inc., receives gavel from outgoing president, Gerald N. Madigan. . . . President Leiser is manager of the Pioneer Wrapper Co., Los Angeles. . . . Other officers are: Irwin E. Damon of the Northern Paper Mills, vice-president; Roland Wolf of the California Cotton Mills, secretary; and L. A. Gardiner of the Nekoosa-Edward Paper Co., treasurer. . . . The election meeting was held at Fox Hills Country Club on January 28.

tion. The business of the railroad is to furnish teransportation equipment to move goods and not that of supplying storage facilities. To use cars for this purpose deprived the carriers of their means of fully serving the public. To correct a bad situation, demurrage was adopted. Discourage the holding of cars beyond a reasonable time and thus release idle equipment for hauling the ladings of other shippers. This is in the interests of both the public and the railroads.

Lack of equipment makes it impossible for plants to operate or serve markets. Car shortages are the reason industry suffers irretrievable losses. Increase in business also means demands for cars beyond supply, and depression also means idle cars that represent an investment that brings no profit. Cars earn revenue when they are employed in service of moving freight, and are of greatest value to the shipper when they are available for transportation of his gods.

The carriers can't be expected to immediately purchase new cars to fill unusual demands of the public. As common carriers they are expected to have equipment to meet normal demands and new orders are to replace worn-out cars and meet normal growth in traffic.

In the early days, demurrage rules and rates resulted in serious discrimination for the reason they were not the same in different localities. As a result there came the uniform code of rules to prevent discrimination-prejudice and other evils, the code's purpose being to equalize car distribution.

Legal obligation of the carrier includes placement of car and a reasonable time to load/unload. Payment of "free time" (two days) is included in the transit rate. The obligation does not cover detention beyond the 48 hours. Payment for time over this period or additional time is covered by the demurrage or penalty assessment.

General Order ODT 18A Suspended for 60 Days

General Order ODT 18A has been suspended for 60 days, from February 14 until 11:59 p. m. April 16. For several months cancellation of the order has been requested by various shipper associations. The order while in effect forced shippers of carloads to load above the minimum weights as specified in the tariffs. In many cases, especially light-weight bulk gods, this has been a task for the shipper and required special permits from the Office of Defense Transportation. The purpose of the order invoked in war-time was to increase loads, due to the car shortage. One reason for the order to have lived so long after the war is that cars for shipments have been scarce and those in service became obsolete faster than it was possible to replace them with new equipment.

The order brought hardships to shippers whose orders had to be raised in weight to secure carload rates. In many cases, business suffered losses where the buyer couldn't accept the required minima ordered by the Government. There were also plants suffering shortages of material that in turn couldn't also ship complete orders to their customers.

The paper industry endured its share of the experiences encountered during the long "shortage" period when supply and demand couldn't be balanced. In addition plants suffered headaches with car supply restrictions. Distribution of cars through the past few years, even though the attempt was made to control equalization of car supply, involved many problems for the carriers than shippers realized. Some industries were favored on the basis of "emergency" over others who really had an emergency. Cars were wasted in plants that didn't need them, while others had loaded platforms without the proper number of cars to move the lading. As an example (and this isn't an extreme exception) cars moved out of a steel plant with *two* car wheels in each gondola for Russia. Not only the steel, but also the freight charges were paid by Lend-Lease money, meaning the foreign government received supplies and service without cost. In contrast to this there were paper mills that could not get cars and the housewife was asked by the corner grocer to bring her own paper bag.

For quite some time there hasn't been need for the existence of ODT 18A and shipper associations have sought for a permanent cancellation. While this has not been accomplished, there is some relief in the suspension for the reason that the shipper will not be forced to meet government weight requirements. The order was suspended due to the drop in carloadings. The decline in traffic is in part due to the severe weather conditions that have prevailed in various portions of the country this winter. In the event traffic increases and car shortages develop during the suspension period, the suspension order will be promptly revoked.

Intrastate vs. Interstate Commodity Rates

The experience of a paper maker whose material transportation costs are excessive will illustrate what can be done to reduce shipping expenses.

The firm buys wood pulp in bulk loads from a broker in New York. Movement of the lading travels by water to a Lake port, where shipside delivery is made to a warehouse for storage. From this point movements are made to various destinations in the state. The purpose of water-rail routes is to distribute traffic to other forms of transportation and also to offer the shipper lower rates than all-rail movements.

The firm, in a study of the rates applied, believed they were excessive. On the basis part of the route traveled interstate, that of water, and the balance by rail intrastate, it was contended lower rates should be applied on the latter. The difference between the interstate and intrastate rates is about 50 percent. Complaint to the rail carrier that charges should have been based on the lower intrastate commodity rate brought the answer that the proper rate had been applied for the reason that the shipment was a continuous interstate movement. The question then—how to have the lading move on the lower intrastate rate?

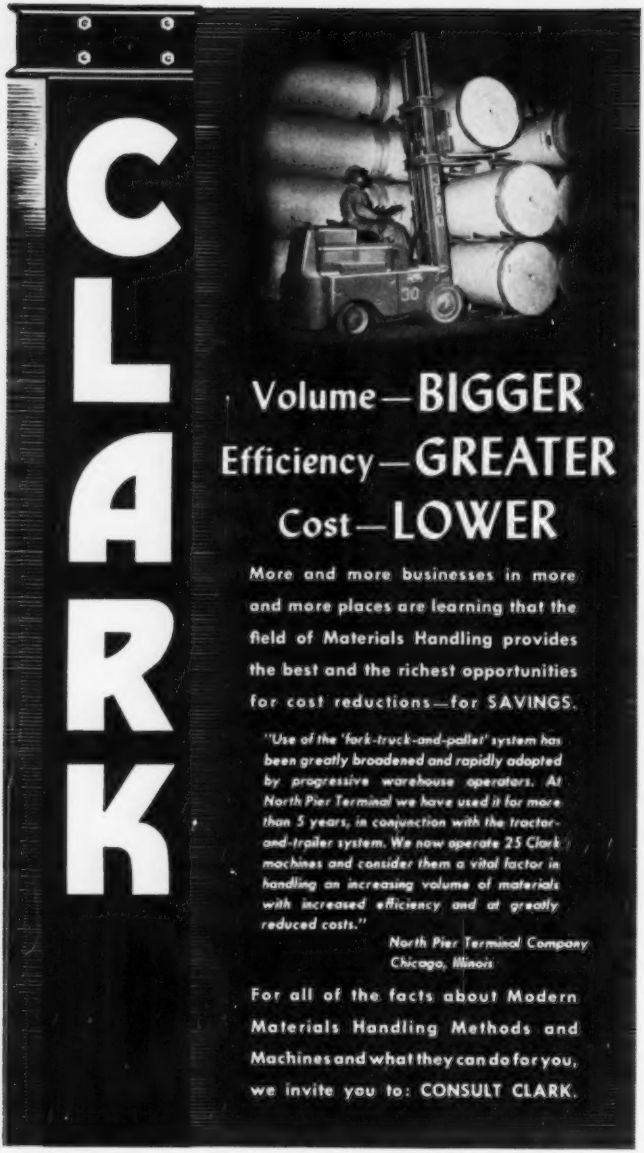
Remember this fact; the lading crosses several states before arriving at its destination and it is an interstate shipment. There are different forms of transportation used, but this does not change the "interstate fact" for the point of origin is New York and the Lake port destination is in another state. However, the origin in New York isn't the first, for the broker buys the pulp in the South. That "interstate" movement is separate and distinct from other destinations. The lading comes to "rest" in New York and from this point on, New York is the *first* origin to the firm purchasing the pulp. From New York to the Lake port the firm does not question that the lading moves interstate, nor does it question the charges applied. But the firm did dispute the carrier picking up the lading in the state and delivering within the state, applying an *interstate* rate to an *intrastate* movement.

Bearing in mind the fact that there is a difference in the view of *origin* (the firm held the rail origin is in the state, the carrier held the origin is in New York) to keep out of trouble, one should not attempt to aply intrastate rates to an interstate movement. It isn't legal to route a shipment from one point to another point in each state with separate rates in order to get cheaper transportation, even though there are in effect lower intrastate rates. This has been done and every complaint to the Interstate Commerce Commission that the carriers charged excessive rates was informed that the *intrastate rates* do not apply on an interstate shipment.

There is one practice that may be used to avoid violations and that is to change buying locations. The firm purchasing pulp in New York can make different arrangements with the broker. The shipment can move by this method; the broker ships the lading to *himself* for delivery at the Lake port warehouse. The firm purchases the order from the *broker's stock* in the warehouse and from this point to destinations (the firm distributes to other mills) the shipments are intrastate and the lower rate will apply. The broker no doubt will have to register in the state to do business on this basis, however.

Harrison Retires

OTTAWA—Frederick A. Harrison has retired as Deputy Minister of Lands and Forests for the Nova Scotia Government in Canada.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Obituary

Mrs. J. Lewis Perkins, Sr., chairman of the board of the American Tissue Mills and of B. F. Perkins & Son, both of Holyoke, Mass., died at her home in that city on February 14. The former Miss Malvena Perron, she was married to the late J. Lewis Perkins in 1895. Surviving Mrs. Perkins are two sons: J. Lewis, Jr., president of B. F. Perkins & Son; and B. F., president of the American Tissue Mills; and a daughter, Mrs. Merle J. Duryea. Also, two brothers and three sisters.

Harrison Newell, paper engineer with the American Writing Paper Corp., South Hadley Falls, Mass., for 28 years, died in Holyoke Hospital on February 13. Mr. Newell was a descendent of Elder William Brewster, first Pilgrim minister, and of William Whipple, a signer of the Declaration of Independence. Surviving him are his widow, Mrs. Elizabeth (Hamilton) Newell; and two daughters, Mrs. Davis W. Lewis and Miss Eleanor Newell.

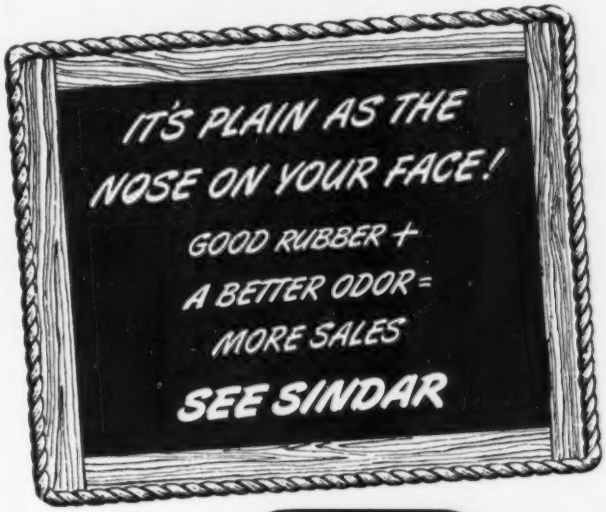
J. J. "Captain Jack" Williams, who retired as paper mill superintendent of the Halifax Paper Co., Inc., Roanoke Rapids, N. C., on February 1, died on February 9 in that city. Captain Jack joined the firm in 1911 as night superintendent. He was made general superintendent in 1912, and promoted in 1937 to the position he held until his retirement.

Benjamin F. Brown, 79, retired wholesale paper merchant and a former director of the New York Printers Board of Trade, died at his home in Great Kills, Staten Island, N. Y., of a heart ailment on February 9. Surviving him are his widow, Mrs. Carolyn Brown; a son, Benjamin F., III; a sister, Miss Maud L. Brown; and two brothers, James L. and Daniel.

Martin Hoi, 70, retired field assistant at the New York State Experimental Station, died at his home in Geneva, N. Y., on February 14. Mr. Hoi retired last June from his work at the station, where he had been employed 26 years.

Edmund A. Ashley, 75, retired sales manager of the American Tissue Mills, Holyoke, Mass., died at his home on February 13. Surviving him are his widow, Mrs. Daisy (Wilson) Ashley, and a daughter, Mrs. Sarah Ashley Fletcher.

Alonzo Lee Gordon, 58, district manager of the Gaylord Container Corp., Memphis, Tenn., died at his home in that city on January 30. Interment was in Houston, Texas.



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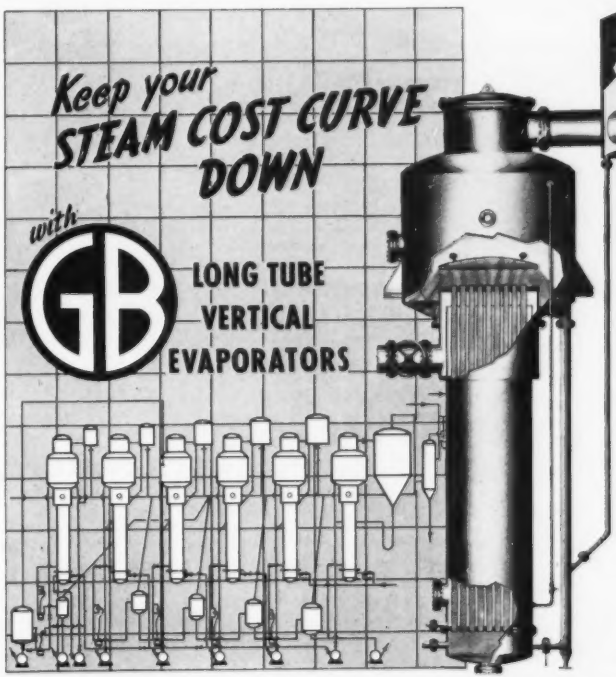

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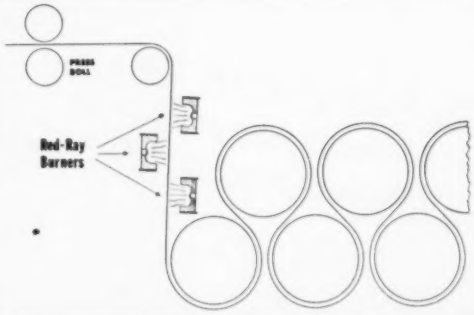

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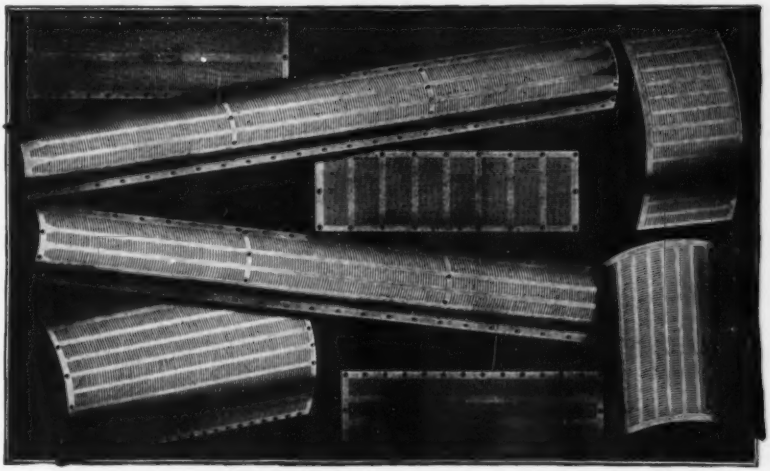

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H.P.	Make	Type	Volts	Speed
2000	G.E.	I.M.	2300	120
1500	Westg.	H.F.	2300	257
1500	G.E.	M.T.	6600	253
1000	Al.Ch.	ANY	2300	240
800	Westg.	C.W.	6600/440	587
750	Westg.	C.W.	2300	900
750	G.E.	M.T.-16	2300	450
600	G.E.	I.M.	2300	600
600	G.E.	I.M.	440	352
500	Ideal	A.V.	2200/4000	1800
500	Al.Ch.	ANY	2300	514
400	G.E.	I.M.	2300	900
400	Al.Ch.	ANY	4000	1180
400	Al.Ch.	ANY	4000	514
350	G.E.	I.P.	2300	720
350	Westg.	C.W.	2300	450
300	G.E.	I.M.	2300	600
300	G.E.	I.RA	2300	1750
250	Ideal		440	720
250	Al.Ch.	ANY	2300	300
250	Westg.	C.W.	2300	600
125	G.E.	I.M.	2300	720
100	Al.Ch.	ANY	440	720
100	Westg.	C.W.	440	575
75	G.E.	I.M.	440	1750
75	G.E.	I.M.	440	514
60	Westg.	C.W.	2300	870
50	L.A.	G.H.	440	870
50	G.E.	I.M.	440	1720
35	Westg.	C.W.	440	1200
35	G.E.	I.M.	440	1200
35	F.Moore		440	1800
3c	Line	crane	440	900
30	G.E.	M.T.	2300	1750
30	G.E.	ITC	440	1800
30	G.E.	M.T.	220	900
25	G.E.	M.T.	440	1200
20	Al.Ch.	ARY	440	900
15	Westg.	C.W.	440	900
15	Al.Ch.	ARY	440	900
11	Westg.	MW	440	1100
10	Al.Ch.	ARY	440	900
7½	G.E.	ITC	440	1200

SQUIRREL CAGE MOTORS

H.P.	Make	Type	Volts	Speed
700	G.E.	K	2200	1800
500	G.E.	K	440	1800
500	G.E.	KTP	440	1800
400	Al.Ch.	Sol.ct.	2300	900
400	G.E.	I.K.	2200	1800
400	Westg.	C.S.	2200	1800
350	Westg.	C.S.	2200	900
300	G.E.	I.K.	440	900
250	G.E.	I.K.	2200	900
250	Westg.	C.S.	2200	1800
200	Wagner	2BV.	440	1800
200	G.E.	K	2200	720
200	G.E.	K.F.	2200	705
200	G.E.	TEFC	2200	1800
200	Westg.	C.S.	440	720
150	G.E.	K.T.	2300	600
150	Cont.	TEFC	440	900
125	Westg.	C.S.	440	3600
125	G.E.	TEFC	440	1200
100	Al.Ch.	A.R.	440	514
100	Al.Ch.	A.R.	440	900
100	U.S.	Vert.	440	1200
100	Burke	E.M.	440	1200
75	Triumph	T.E.	220	514
75	G.E.	I.K.	440	720
75	G.E.	F.T.	440	720
75	Westg.	Vert.	2200/440	900
75	G.E.	K.	220/440	1200
75	G.E.	TEFC	440	1200
75	Al.Ch.	A.N.	440	1200
75	Al.Ch.	A.R.	2200/440	1800
60	Al.Ch.	A.R.	440	514
60	G.E.	KG.cert.	440	1200
60	G.E.	K.	440	1800
60	G.E.	TEFC	440	1800
60	G.E.	K-444	440	1800
50	Westg.	C.S.	440	900
50	G.E.	KT-346	440	900
50	Westg.	TEFC	440	1200
50	G.E.	K-444	440	1800
50	U.S.	Vert.	440	1800
50	Westg.	C.S.	440	1800
40	G.E.	K.T.	440	720
40	G.E.	K.T.	440	900

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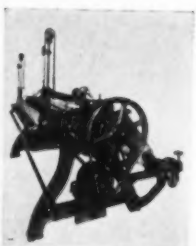

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IN ACTUAL USE the Mount Hope Expander belies its name since it does the job without expanding the moist paper. It is equally effective with dry paper, eliminating baggy edges that cause out of register printing on offset and lithograph presses. Used on rewinders, it eliminates welts and wrinkles.

IF YOU have creasing and wrinkling problems, it will certainly pay you to investigate the advantages of Mount Hope Expanders.

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Representatives — Parkman Collins Company, Boston — for Maine; Ingalls Engineering Company, Providence — for N. H., Mass., R. I., and Conn.; John H. Andreson, Inc., Paterson — for Southern N. Y., N. J., and Pa.; Slaughter Machinery Company, Charlotte — for the South; S. B. Wilson, 1737 Howard Street, Chicago — for Mid-West; Sidney Springer, Los Angeles — for California; W. J. Westaway Company, Limited, Hamilton and Montreal — for Canada.

* *A large New England Paper Converting Company.*

Creative resin chemistry for Paper manufacturers

American Polymer Corporation's creative chemists have developed a wide range of resin emulsions and solutions that are doing outstanding jobs in improving paper products. Four of the many resins developed for use on paper are described below. These or their modifications may meet *your needs.*

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There are three POLYCO polyvinyl acetate emulsions graded molecular weights, particle size and water resistance for greaseproofing and heat seal applications. All are water-white, non-oxidizing, tasteless and odorless. Request Data Sheet P-1.

POLYCO POLYVINYL ACETATE SOLUTIONS

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Blended with starches or casein, POLYCO 350 latex coatings make clay-coated papers extremely flexible and provide a surface which may be readily embossed or printed. Being thermoplastic, coatings formulated with POLYCO 350 flow readily under the action of calenders or embossing rolls to give glossy, smooth surfaces. POLYCO 350 also finds use as a pigment adhesive and base for compounding laminants. Ask for Data Sheet P-11.

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Technical Data Sheets on these paper coatings, saturants and impregnants are available on request. Send for your copies today.

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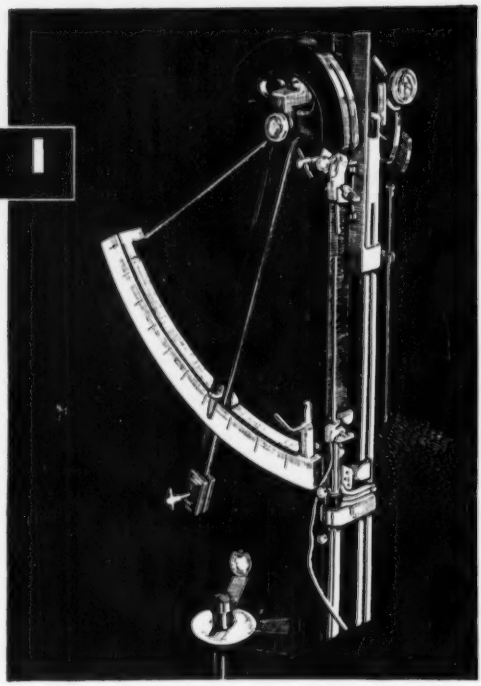

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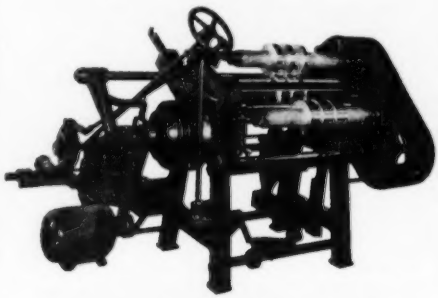

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IN 4 SIZES
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Designed for Slitting Cellophane—Foil and Acetate Stock

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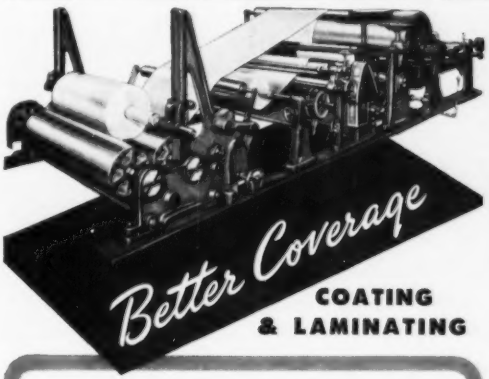

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THIS brand new No. A-4 aniline printing press offers perfect register at highest speeds on cellophanes, foils, and other materials your customers require for wrapping their products. Many other models in our complete line of presses are available for the aniline printer. Write us for complete detailed descriptions.

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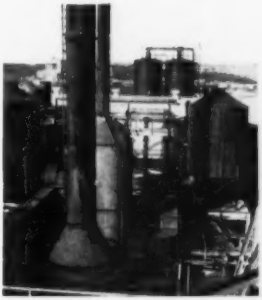

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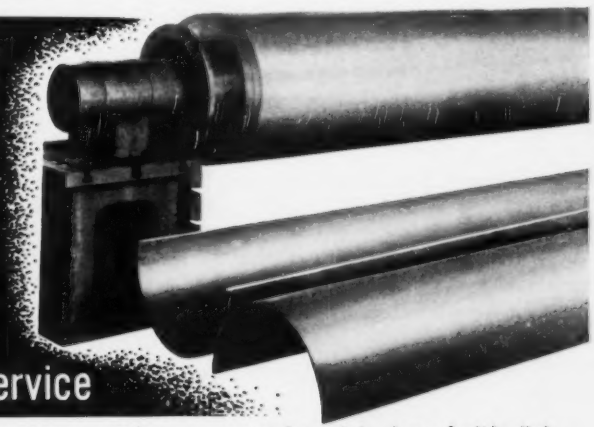

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Your employees want to help you build security

HERE'S HOW 7,500,000 WORKERS ARE DOING IT

More than 20,000 companies now maintain the Payroll Savings Plan, by which their employees invest in U. S. Savings Bonds automatically every pay day. This Plan builds security not only for the individual employees, but for their companies and for the nation!

As you know, Savings Bonds pay $4 at maturity for every $3 invested. Thus they help create a "rainy-day" fund for each Payroll Saver, increasing *his* security.

How P. S. P. helps employers

America's leading corporations report these *company* benefits from the Payroll Savings Plan: As Bonds increase the worker's economic peace of mind, plant morale improves. Production increases—because absenteeism, labor turnover, and the accident rate all decline. Relations improve between employer and employee.

Savings Bond dollars are dollars removed from the spending stream. They are deferred purchasing power—an assurance of good business during the years to come. The Treasury uses net Savings Bond dollars to help reduce inflationary credit potential in the banking system by retiring short-term bank-held Federal securities. So Bonds increase the *nation's* economic security, too!

Proof that employees want P. S. P.

Practically everybody wants to *save*. Every one of your employees could be saving *more* if he were obtaining Savings Bonds regularly, right where he works. Even with today's high prices, it has been proved that between 40% and 60% of America's working millions—at any wage level—can and will buy Bonds through Payroll Savings *if management sponsors the Plan and if a fellow worker asks them to sign up.*

Yes—your employees want to help you build security—for all of us. It's up to you whether they get the chance. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bonds Division. While it's on your mind, why not call him? Or write the Treasury Department, Washington 25, D. C.

The Treasury Department acknowledges with appreciation the publication of this message by

PAPER TRADE JOURNAL

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MILL MANAGER

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IN YOUR REPLY STATE COMPLETE PERSONAL QUALIFICATIONS, PREVIOUS POSITIONS HELD AND SALARY EXPECTED.

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St. Helens, Oregon

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required by Canadian mill producing 500 tons per day of Specialty Papers, Tissues, Paperboard and Newsprint. Position requires proven managerial ability and technical qualifications for the production of paper. The location is most desirable and salary attractive. Applications giving all essential information will be kept confidential if desired — and should be addressed to

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M-3

Leading manufacturer of machinery for the paper and textile industries desires a high grade engineering graduate to supervise sales and promotion of new products. The man we want is already engaged in this field of work. Send photograph and full details of experience. Please address all your replies to P. O. Box 748, New Brunswick, N. J. TF

WANTED
CHIEF ENGINEER

to take complete charge of Fox River Valley (Wisconsin) Paper Mill Power Plant, supervising the operation and maintenance of high pressure boilers, turbines and auxiliary equipment. Man with technical and practical background preferred. Excellent opportunity to use initiative and supervisory ability.
Give complete personal and business history on letter of application. All replies held confidential.
Address Box 49-66 care Paper Trade Journal.
F-24

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TF

Pulp and Paper Mill in South America requires two young mechanical or mechanically minded chemical engineers to take posts of assistants to Superintendents. Work will require certain amount of night work and will entail a thorough training in the rudiments and operating details of manufacture. Candidates should be graduates of technical school, single, in good health and with a desire to enter South American industrial field. Address Box 49-88 care Paper Trade Journal. M-3

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EXPERIENCED FOLDING BOXBOARD SALESMAN

AN EXCELLENT OPPORTUNITY FOR AN EXPERIENCED MAN, IN THE METROPOLITAN NEW YORK AREA, WITH LEADING MILL LOCATED IN NEW YORK VICINITY. ONLY APPLICATIONS OUTLINING FULL QUALIFICATIONS WILL BE CONSIDERED. DRAWING ACCOUNT. Address Box 49-107, care Paper Trade Journal. M-3

SALESMAN WANTED—Responsible manufacturer representatives in Chicago and in New York to handle specialty line for candy manufacturers. Address Box 49-82 care Paper Trade Journal. M-10

WANTED — Machine Tender and Back Tender for straight Fourdrinier running High Grade Tissues. Flower City Tissue Mills Co., Rochester, 12, N. Y. M-3

HELP WANTED

WANTED
PAPER RESEARCH CHEMIST

to supervise group of 6 to 8 men on development of paper products in research laboratory of upper midwest manufacturer of bleached groundwood, sulphite and kraft printing and converting papers. Must be well grounded in paper chemistry and manufacturing processes with development experience in these fields. Prefer man 30 to 40 years old with a good knowledge of book grade bleached papers and enamel grade coated papers. In reply give personal history, training, experience and salary expected.

Address Box 49-52, care Paper Trade Journal. TF

HELP WANTED

PRESSMAN—Experienced on rotary multicolor presses, coffee bag experience preferred but not essential, excellent opportunity for person with right qualifications, state full details. AMERICAN BAG AND PAPER CORP., Water & South Sts., Philadelphia, Pa. F-24

CHIEF CHEMIST WANTED for a board specialty mill. Address Box 49-84 care Paper Trade Journal. M-24

WANTED—Four Machine Tenders for Cylinder wet machines. Address Box 49-106 care Paper Trade Journal. M-3

SITUATIONS WANTED

CHEMIST — EXPERIENCED CHEMIST AVAILABLE. Address Box 49-38 care Paper Trade Journal. M-3

FOR SALE

BARKERS
1—5' Carthage Disc Barker

BEATERS
3—1000 lb. Dilts Beaters—Iron Tub.
1—800 lb. Beater—iron tub.

BRASS FELT ROLLS
9—4" diameter x 140" face (with bearings).

BREAST ROLLS
1—100" x 14".
8—114" x 14".
1—120" x 14"

CALENDER STACK
1—72" 5 roll Calendar Stack.

CRUSHERS
1—18" x 18" Jeffrey Single Roll Crusher

CYLINDER MOULDS
1—36" diameter x 80" face.
1—30" diameter x 72" face.
1—36" diameter x 79" face.

DECKER
1—Decker—48" diameter x 84" cylinder mold (New).

DRIVES
2—#4 Reeves Drives.
1—#2 Reeves Drive.
1—Smith & Winchester mortise gear Drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2:16 to 1. 900 RPM.
1—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1)
2—Smith & Winchester Mortise Gear Drives with 28" diameter clutches—Ratio 8 to 1.

DRIVES (Angle)
1—General Machine Company 16 : 1.
1—Philadelphia 50:1 — 1 h.p. — 1200 r.p.m.
2—Philadelphia 21½:1 — 3 h.p. — 1200 r.p.m.

V-BELT DRIVE
(1—81¼" diameter x 7½" face, 5 groove
(1—16½" diameter x 7½" face, 5 groove
(With clutch).

DRYERS
9—36" diameter x 76" face.
1—48" diameter x 91" face.
1—48" diameter x 94" face.
8—25" x 120" (Baby Dryers)
2—36" x 143".
1—24" x 130".

FLAT SCREENS
2—12 Plate Murray Dunbar Flat Screens.
1—8 plate Packer Type Flat Screen.
1—6 plate Shartle Flat Screen.

HYDRAULIC PRESS
1—Watson-Stillman Co. (Platen 24" x 24").

JORDANS
1—Noble & Wood, Pony Monarch. Belt Driven.
2—Noble and Wood—Mammoth Type.

MISCELLANEOUS
1—Caustic Mixer.

MOTORS
2—5 h.p. ball bearing—splash proof motors —3/60/440. 1160 r.p.m.
1—¼ h.p. ball bearing—splash proof gearhead motor—3/60/440. 1725 r.p.m.
1—2 h.p. ball bearing—splash proof gearhead motor—3/60/440. 1725 r.p.m.

PRESS ROLLS
Various sizes.

PULLEYS
Various cone and assorted pulleys.

PULP STACKER
1—Link Belt Company Pulp Stacker, 30 ft. conveyor, 2½ ft. wide, self propelled, with motors.

PULPER
1—Jones Pulper. Complete with motor and drive.

PUMPS
2—Weil Pump Co.—100 g.p.m.—100 P.S.I. including 15 h.p. motors (new equipment).
1—Bell & Gossett—300 g.p.m.—120' head—including 15 h.p. motor.
1—Goulds Sump Pump—50 g.p.m.—20' head —including motor.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REEL
1—72" Beloit Reel.

ROLLS
500—Brass tube-steel tube—rubber covered iron rolls—various sizes.

SAVEALL
1—#5 Bird Saveall.

SCREEN PLATES
20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock

SHEETER
1—138" Moore & White Sheeter, duplex, with layboy.

SLITTERS AND WINDERS
1—102" Cameron—Type 18.
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1—62" Cameron—Type 10-10-AJ.
1—56" Cameron—Type 24-2A.
1—50" Cameron—Type 24-2L.
1—42" Cameron—Type 40-4-B.
1—42" Cameron—Type 28-8-7 (shear cut).
1—42" Cameron—Type 24-2A.
1—42" Cameron—Type 9-5.
1—42" Cameron—Type 6.
1—42" Cameron Constant Tension with pneumatic control.
1—30" Langston.

SQUEEZE ROLLS
2—Rubber Squeeze Rolls, 20¾" diameter x 102" face.

STOCK PUMPS
1—10 x 20 Shartle Duplex.
4—7 x 16 Shartle Duplex.
Numerous other Centrifugal Stock Pumps. Advise as to your requirements.

SUCTION COUCH ROLLS
1—Sandusky 14⅛" diameter x 103" drilled face.
1—Sandusky 22" diameter x 119" drilled face.

SUCTION PRESS ROLLS
1—Downingtown Suction Press Roll 18" diameter x 86" drilled face.

TRIMMER
1—56" Smith & Winchester—Undercut.

TURBINE
1—150 h.p. Westinghouse Type C-Gear Turbine (Recently rebuilt).

VACUUM PUMPS
1—#4 Nash Hytor Vacuum Pump.
1—Sandusky 8 x 10.

WAXING MACHINE
1—62" Mayer Waxing Machine.

YANKEE DRYERS
1—8' diameter x 175" face.

We are always in the market to purchase your surplus or idle machinery. What have you to offer?
Wanted Cylinder and Fourdrinier Machines (complete mills).

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FOR SALE

FOR SALE

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HEATERS
1—Iron tub 84x84 Shartle breaker
1—Dilts high speed with roll 36x48

CUTTERS
1—130" Horne duplex with duplex layboy
1—100" Hamblet duplex with duplex layboy
1— 94" Clark single with layboy
1— 84" Clark single with layboy
1— 70" Clark
2— 48" Hamblet

DRYERS
1—12 ft. x 105" Yankee
1—12 ft. x 130" Yankee
2— 8 ft. x 174" Yankee
5— 5 ft x 174"
4—48 x 118"
2—48 x 100"
1—48 x 82"
19—36 x 65"

FOURDRINIER PARTS
1—Wire 50' x 110" anti friction with 18" suction couch and three sets presses, rolls 20 x 108".
1—100" Fourdrinier Part with 30" suction couch, 20" diameter breast roll, 8" diameter table rolls.

JORDANS
1—No. 2 Appleton, anti friction, with 150 HP motor
1—No. 5 Miami, anti friction
1—No. 2 Dillon
3—Noble & Wood Pony

MOULDS
1—36 x 125"
1—60 x 84"
1—48 x 84"
1—96 x 84"

PAPER MACHINE
1—100" trim combination machine
1—94" trim facial tissue and M G machine with 8" dia. Beloit dryer
1—84" Fourdrinier paper machine

PUMPS
2—12 x 12 Gould triplex
1—10 x 20 Shartle duplex
1— 7 x 10 Gould triplex

SCREENS
2—No. 3 Bird
Flat screens, 3 to 16 plate
Leith Walk and Moore & White rotary

SLITTERS
1—234" Rice Barton
1—150" Moore & White four drum
1—150" Warren two drum
1—130" and one 122" Pusey & Jones two drum
1—112" Kidder
1— 62" Langston
1— 50" Cameron
1— 32" 44 W Cameron

SUCTION ROLLS
1—30 x 130" Couch
1—22 x 150" Press
1—25 x 106" Couch
1—10 x 140" Couch
1—18 x 92" Couch

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1—Baker electric truck, model D T O
1—Walker electric highway truck, 4000 lb. Capacity, Model 42 with generator
1—Automatic tractor and pilot

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FELT MILLS—Experienced engineer and mastermechanic has invented and patented several products and processes, offering new and wide markets for asphalt felts, would like to contact reliable company interested in finding new outlets for their felt. Will consider sale of patents alone, or with expert engineering services in development of production and marketing new product. Box 49-78, Paper Trade Journal. F-24

PAPER MILL CLERK, salesman, with considerable practical and technical background in the manufacture of sulphite (rayon) and Kraft pulp, wide range of papers and all round commercial experience (administration line, exportation, foreign correspondence, cost-accountancy, etc.) with long practice in doing difficult translation work of the Research-Development-Manufacture and Patent Literature (GERMAN, ENGLISH, FRENCH, ITALIAN), seeks opportunity. Address Box 49-80, care Paper Trade Journal. F-24

PLANT MANAGER—Thorough experience in converting paper and boards; wants change to position offering better opportunity. Excellent production and labor relations background. Address Box 49-15 care Paper Trade Journal. F-24

PRODUCTION ENGINEER in paper mill or converting plant. Experienced in production and development new products. Can obtain increased production and reduce costs. Address Box 49-92 care Paper Trade Journal. M-3

SUPERINTENDENT—Twenty years experience on Yankee and straight Fourdrinier and cylinder machines, producing facial, toilet, napkin and towelling papers. Mechanical background with excellent production and labor relations record. Address Box 49-73 care Paper Trade Journal. F-24

FINISHING FOREMAN: Years practical experience, efficient operator, sheeters, rewinders, trimmers, clerical, schedule, ship. dept., book, bond, manifold, envelope, printing papers, tissues, wrapping, news, glassine. Address Box 49-94 care Paper Trade Journal. F-24

ADMINISTRATIVE ASSISTANT to director of research in paper or in specialty coatings. Sixteen years experience in industry. Address Box 49-93 care Paper Trade Journal. M-3

CHEMICAL ENGINEER—Sixteen years experience in pulp, paper and allied industry in research, inspection and control, desires development work where knowledge of paper and pulp processing will be of value. Address Box 49-69 care Paper Trade Journal. F-24

SALESMAN seeks position with manufacturer or converter; experienced paper export sales. Eligible GI on-the-job training. Address Box 49-102 care Paper Trade Journal. F-24

SITUATIONS WANTED

RESEARCH DIRECTOR experienced in Paper Converting and Coatings, technically trained with plant experience as well as research. Address Box 49-91 care Paper Trade Journal. M-3

CHEMICAL ENGINEER—Experienced, laboratory organization, pilot plant, testing stations, test methods, quality, control, processes, analyses. Address Box 49-39 care Paper Trade Journal. M-3

ENGINEER, Plant or Master Mechanic. College training. Good draftsman. 20 years experience, Steam, lumber, paper, chemical plants, construction and maintenance. Available at once. Box 49-34 Paper Trade Journal. M-3

SUPERINTENDENT or assistant superintendent. Practical paper maker with 24 years experience manufacturing all grades of folding boxboard and text liner, with ability to upgrade and increase production at minimum cost. Best references. Address Box 49-108 care Paper Trade Journal. F-24

PAPER MILL SUPPLY & Equipment Salesman. Will represent manufacturer selling to mills in Pennsylvania, New York and New England. Well known in the trade. Commission or salary. Best of references. Reply to Box 49-81 care Paper Trade Journal. M-10

FOR SALE

USED EQUIPMENT FOR SALE

7—Mortise Gear Drives, some Pusey & Jones, some Bagley & Sewall, with cone, pulleys, line shaftings, pillow blocks, etc. sufficient for complete drives.
2—16 x 24 Connersville Vacuum Pumps.
1—Cleveland double worm Gear Reducer, ratio 758½ to 1, 10 h.p.
1—75" face double Glue Unit.
1—30" Ream Press.
1—Core Machine, complete.
1—Asphalt Tank, 66" x 96".
1—Asphalt Laminating device, 3 roll, 72" face, 11" diameter, all rolls bored for steam.
1—Duplex, steam driven, Boiler Feed Pump.
1—Steam Drive, wet Vacuum Pump.
2—Steel Silicate Tanks, 23' x 6" x 60" O.D. welded ends.
1—75" Laminater and parts (dismantled).
1—Improved Paper Machinery Flat Screen, 16 Plate Screen.
1—Soft Rubber Couch Roll, 96" face, 18" diameter.

Address Box 49-109 care Paper Trade Journal. M-3

FOR SALE

FOR SALE

1—Triple Effect Zaremba Evaporator, 84" diameter, each effect 1200 sq. ft. of heating surface, 440—1" steel tubes, 2 tilt traps, 2 moisture separators, interconnecting piping and barometric condenser, traps and 3 liquid level controllers. Vacuum pumps are not included. Available for immediate shipment. May be inspected at any time.

2—#420 Black & Clawson 10" x 16" Triplex Geared Stock Pumps, bronze fitted, belt drive, 30" x 10" pulley.

2—Pusey & Jones Triplex Stock Pumps, 10" diameter cylinder, 20" stroke, 25 revolutions of crank shaft will throw 469 gallons. Pumps driven on jack shaft arrangement, gear and pinion drive.

1—Duo-arrangement comprising Van de Carr patent stock inlet combined with two standard slices of 14" and 8" high standard design with center and end adjustment supports on adjustable side frames. Stock inlet Pusey & Jones design, 30" high, equipped with motor driven direct-connected perforated distributor roll, adjustable device for leveling the sheet, adjustable deckle in-plates, gauge glass and necessary supporting frames.

3—Washer Cylinders, 42" diameter x 84" face.

24—Brass Table Rolls, 7" diameter x 196" face, equipped with Timken Roller Bearings #375-372.

Address Box 49-96
care Paper Trade Journal

F-24

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1—102" Cameron Slitter and Winder Type 18. 106" drums. Rewind capacity 60" diameter.

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Tel. Bigelow 3-3720

J-20

FOR SALE—62" and 106" Beloit 4 Ply Board Pasters. Now running. 62" has Paper Lining Stations. Address Box 49-104 care Paper Trade Journal. M-17

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New 44" National Automatic Clamp Power Cutters, with A.C. motors — carried in stock, ready immediate shipment.

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FOR SALE AND REMOVAL: Complete equipment in operating plant for the production of coated and printed paper specialties. Conversion to roll or sheet form. Includes waxer, coater, laminator, printing presses, winder, and sheeter, complete with motors. For full particulars and prices address Gibbs-Brower Co., Inc., 21 E. 40th Street, N. Y. F-24

FOR SALE

55" New Beck Sheeter with Layboy in original crate. Selling below cost. 65" & 44" Sheridan Paper Power Cutters completely rebuilt like new. Also Die Cutters, Printers, Slitter & Rewinders and other Paper Converting & Finishing machines. Write for listing—all sacrificed at pre-moving sale. Address Box 49-97, care Paper Trade Journal. M-17

FOR SALE

1—Biggs Globe Rotary Digester — complete

1—William Allen Sons Co. Circulating Liquor System complete. Foxboro Recorder and Flow Meter.

1—William Allen Sons Co. Cooker Circulating System complete. Foxboro Liquid Level and Temperature Controller. Never installed.

For further information, write Box 49-68, Paper Trade Journal M-3

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8 Air Dry Tons per day of pure chestnut wet lap available for immediate shipment. Write for details and sample.

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FOR SALE—EMBOSSER, B. F. Perkins, 45" now in full operation. Complete including steel engraved roller and two paper rollers unwind and rewind. $3500.00. Selling to make room for new machine. JOSEPH M. KATZ & COMPANY, Paper Square, Pittsburgh, 6, Pa. TF

FOR SALE—52" Slitter-Rewinder manufactured by Cannard. Score-cutter. Rebuilt. Ran day and night until recently when it was replaced by larger machine. Exceptional value at $2,500.00. THE PAPERCRAFT CORPORATION, Paper Square, Pittsburgh, Pennsylvania. TF

FOR SALE—EQUALIZERS or wire wound DOCTOR RODS for carbon, wax, glue, asphalt and other coating machines. Precision wound on ⅛, 7/64 and 3/32 rods with music spring wire. .004 and .005 available in stainless steel wire. Address Box 49-87 care Paper Trade Journal. F-24

FOR SALE—Toilet Tissue and Paper Toweling Converting Machines. Size 81"—New Equipment. Immediate delivery. Address Box 49-100 care Paper Trade Journal. M-3

FOR SALE—Jonsson Screen complete with motor, starter and drive. Screen plate with ¼" holes on 5/8" staggered centers. As purchased, not used in production line. Address Box 49-97 care Paper Trade Journal. M-3

FOR SALE—Junior Automatic Toilet Roll Wrapping Machine. Roll wrapper feed. Originally built for cellophane or acetate. Manual registry. (Electric eye can be added). Demonstration by appointment. Immediate delivery. Special price. Address Box 49-83 care Paper Trade Journal. M-10

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FOR SALE—40" Meisel Shear cut Slitter with 50 sets of knives. Like new. Address Box 49-103 care Paper Trade Journal. M-3

WANTED

WANTED—Moore & White Fuellner White Water Saveall. Address Box 49-78 care Paper Trade Journal. M-3

WANTED—Complete Embosser suitable for tissue grades. Address Box 49-74 care Paper Trade Journal. F-10

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 48-223 care Paper Trade Journal. TF

WANTED—Brightwood Box Machine. Address Box 48-224 care Paper Trade Journal. TF

PAPER MANUFACTURER desire to purchase or invest in converting business of standard paper products. Address Box 48-222 care Paper Trade Journal. TF

WANTED

WANTED—Cut-off Knife 102" or wider for board pasting machine. Address Box 49-105 care Paper Trade Journal. M-17

Interested in securing—USED ENGLISH OR POPE TYPE REEL 86" to 110" FACE IN GOOD CONDITION. Address Box 49-99 care Paper Trade Journal. M-3

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FOR FURNISHING
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SEALED PROPOSALS will be received until 10 a. m., March 7, 1949, in the room of the Joint Committee on Printing, in the Capitol, Washington, D. C., for furnishing the paper for the public printing and binding, and blank paper for the use of the Government departments and establishments in the District of Columbia, for the term of three months, beginning April 1, 1949; deliveries to be f. o. b. Government Printing Office Warehouse, or warehouse siding, Washington, D. C. The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposal. The Committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part, if, in its opinion, such action would be in the interest of the Government.

Blank proposals containing the instructions, schedules, and specifications may be obtained by addressing John J. Deviny, Public Printer, Washington 25, D. C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 13 of the instructions.

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In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

By direction of the Joint Committee on Printing.

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MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

Whichever way you look at it...
Long experience ... accumulated knowledge
Strategically located plants
Quick delivery and shipping service

It pays to specify SOLVAY

With today's cost of manufacturing so high, it's the wise chemical buyer who considers his purchases from every angle. Price and specification alone are no longer basis enough for a buying decision. There is a good deal more a buyer can expect—speed of delivery, technical service, big-plant capacity to assure continued supply, knowledge of the industry and experience with its problems. On all these counts, more and more manufacturers agree, "it pays to specify Solvay."

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RESTIGOUCHE
BLEACHED SULPHITE PULP

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for the manufacture of Cellophane, Rayon and Products of Paper.

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BLEACHED SULPHITE PULP

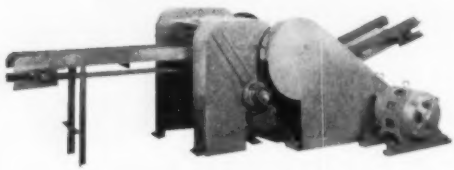
RESTIGOUCHE COMPANY, LTD.
Campbellton, N. B., Canada

Both Large and Small Paper Mills Use —

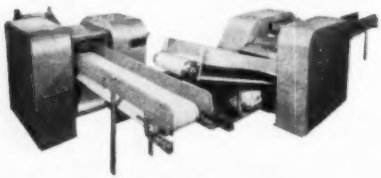
TAYLOR-STILES RAG CUTTERS

The size range of these efficient cutting machines—one ton to five tons an hour—provides for all capacity needs of paper manufacture.

TYPICAL TAYLOR-STILES CUTTERS ARE—



NO. 1 RAG CUTTER—Capacity, one ton an hour. This fine machine compares in every way with our big five-tons-an-hour cutters.



NO. 36 TANDEM RAG CUTTER—Cross cuts the rags for greater uniformity in the size of cuttings. Capacity one and one half tons an hour.

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TRADE MARK
GIANT
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RIEGELSVILLE, N.J. U.S.A.

Where

Abrasives
Monsanto Chemical Co.
Nopco Chemical Co.
Norton Co.
Raybestos-Manhattan Inc., Manhattan Rubber Division

Adhesives
American Anode Incorporated
American Paper Mchy. & Engrg. Works, Inc.
Arabol Mfg. Co.
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
Glidden Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Co.
National Starch Products Inc.
Nopco Chemical Co.
Philadelphia Quartz Co.

Agitators
American Well Works
Appleton Machine Co.
The Bigga Boiler Works Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
General American Transportation Corp.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Warren Steam Pump Co., Inc.

Alloys
Michigan Steel Casting Co.
The Midvale Company

Apron Cloth
Williams-Gray Co.

Asbestos Products
Raybestos-Manhattan Inc., Manhattan Rubber Division

Bag Machines
Potdevin Machine Co.
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

Barkers and Chippers
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

Bars
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

Bearings
Black-Clawson Company
Jones, E. D., & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

Beaters & Jordans
American Paper Mchy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
The Midwest Fulton Mch. Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

Bed Plates
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld, Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

Belting
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
The Goodyear Tire & Rubber Company
Link Belt Company
Raybestos-Manhattan Inc., Manhattan Rubber Division
J. E. Rhoads & Sons

Bleaching Agents
Buffalo Electro-Chemical Co., Inc.
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

Bleaching Boilers, Rotary
The Bigga Boiler Works Co.

Bleaching Apparatus
William Allen Sons Co.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Pennsylvania Salt Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Blow Pipes & Pits
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

Boilers
Babcock & Wilcox Co.
The Bigga Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Company

Bottoms
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

Brush Rolls
M. W. Jenkins Sons, Inc.

Brushes
M. W. Jenkins Sons, Inc.

Bursting Testers
B. F. Perkins & Son Inc.
Testing Machines, Inc.

Calenders
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

Carrier Rope
Williams-Gray Co.

Casein
American Cyanamid Co., Industrial Chem. Div.
Hercules Powder Co., Inc.

Castings
American Cast Iron Pipe Co.
Appleton Machine Co.
Babcock & Wilcox Co.
Black-Clawson Company
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Frederick Iron & Steel, Inc.
Hamblett Machine Co.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Midvale Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

to Buy

Smith & Winchester Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

Centrifugal Machinery

Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

Chains

Chain Belt Company
Link Belt Company

Chemical Cotton Pulp

Hercules Powder Co.

Chemicals

Adell Chemical Co.
Alhydro, Inc.
American Anode, Incorporated
American Cyanamid Co., Industrial Chem. Div.
Ansul Chemical Co.
Buffalo Electro-Chemical Co., Inc.
Caico Chemical Co.
Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Mallinckrodt Chemical Works
Monsanto Chemical Company
The Mathieson Alkali Wks., Inc.
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Witco Chemical Co.
Wyandotte Chemical Corp.

Chests

Kalamazoo Tank & Silo Co.

Cleaning Materials

Adell Chemical Company
Amer. Cyanamid & Chem. Corp.
Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Oakite Products, Inc.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

Clutches

Appleton Machine Co.
Black-Clawson Company
Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works

Coating Machinery

Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

Coating Materials

American Anode Div., The B. F. Goodrich Chem. Co.
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
The Goodyear Tire & Rubber Company
Monsanto Chemical Company
Nopco Chemical Co.

Cogs

The N. P. Bowsher Co.

Compounded Latices

American Anode Div., The B. F. Goodrich Chem. Co.

Compressors

Allis-Chalmers Mfg. Co.
Ingersoll-Rand Co.
Nash Engineering Co.

Consistency Regulators

Askania Regulator Company
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

Consulting Engineers

Birk, F. Paul
Frederic C. Clark Associates
Ebasco Services
Frank W. Egan & Co.
Ferguson, Hardy S.
C. M. Guest & Sons
Hardy, George F.
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
The MacPherson Company
Roderick O'Donoghue
The Rust Engrg. Co.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.
John Waldron Corp.
H. G. Weber & Co., Inc.
Frederick Wierk

Controllers

Askania Regulator Company
Black-Clawson Co.
The Bristol Co.
The Brown Instrument Co.
Cochrane Corp.

Controls

Askania Regulator Company
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Johnson Corp.
Stickle Steam Specialties Co.

Conveyors

American Well Works
Black-Clawson Company
Chain Belt Company
Frederick Iron & Steel, Inc.
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

Core Cutters

Suburban Machine Co.

Cores

Elixman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

Couplings

Black-Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

Cranes

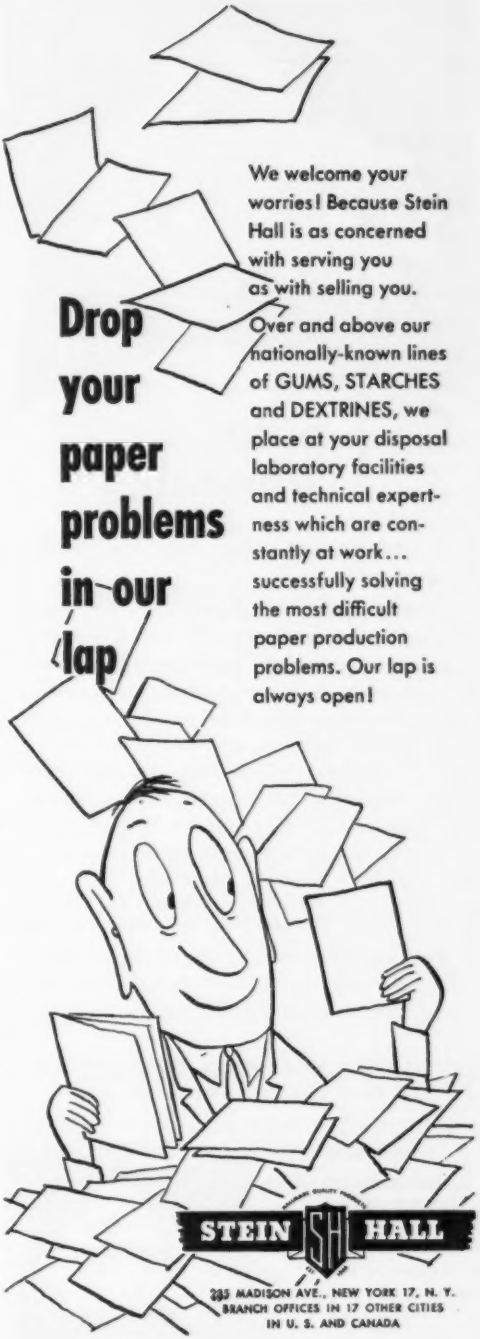
Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

Cup and Container Machines

Mercury Engrg. Corp.

Cutters

Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.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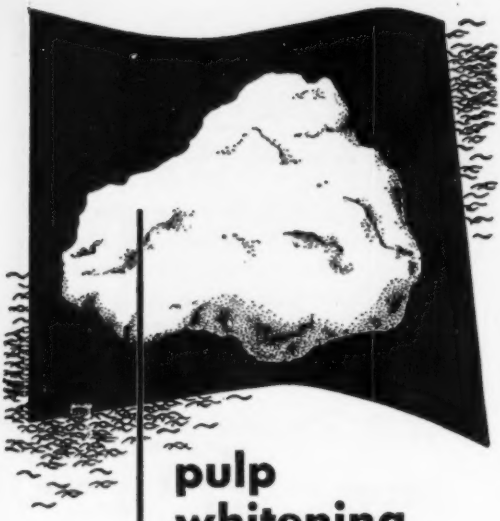

pulp whitening

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wetting properties
deflocculating of solid dirt
suspending of removed dirt

Know how PQ Silicates can improve your products or your profits. Ask for Bulletin No. 17-1 which describes the properties and uses of PQ Silicates.

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ST. LOUIS, MO.
UTICA, ILL.

Cylinders
Askania Regulator Company
M. W. Jenkins Sons, Inc.
National Tube Co.

Dampeners
Perkins & Son, Inc., B. F.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Valley Iron Works Co.

Deasphalting Chemicals
Adell Chemical Company

Deckle Straps
Stowe Woodward, Inc.

Deckle Webbing
Williams-Gray Co.

De-Inking
Adell Chemical Company
Buffalo Electro-Chemical Co., Inc.
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
Shartle Brothers Machine Co

Deinking Chemicals
Adell Chemical Company
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Philadelphia Quartz Co.

Densometers
W. & L. E. Gurley

Design Construction
Ebasco Services

Detergents
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Dewaxing Chemicals
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.

Digesters
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
General American Trans. Corp.
Lukenweld
Pusey & Jones Corp.

Dirtec
Bird Machine Co.

Dispersing Agents
Adell Chemical Company
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.

Doctors
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Doctor Blades
Bird Machine Company
Black-Clawson Company
Lodding Engrg. Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Driers
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
The Youngstown Welding & Engrg. Co.

Where

Drives
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Chain Belt Company
Davis, Frank H., Co.
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Syco Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

Dryer Drainage
Stickle Steam Specialties Co.

Dusters
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

Dusting Brushes
M. W. Jenkins Sons, Inc.

Dyestuffs
American Cyanamid Company, Calco Chemical Div.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.
C. K. Williams & Co.
Witco Chemical Co.

Embossing Rolls
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Midvale Company
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.

Emulsifiers
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Enzymes
Rohm & Haas Co.

Evaporators
Foster Wheeler Corp.
General American Transportation Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

Expanders
Mount Hope Machinery Co.

Fans
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

Feeders
Hardinge Company, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup

Felts
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morrey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

to Buy

Felt Cleaners
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

Felt Conditioners
Bird Machine Co.

Felt Guides
Black-Clawson Co.
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

Fillers
American Cyanamid Company, Industrial Chemicals Division
Johns-Manville Sales Corp.
W. H. Loomis Talc Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Witco Chemical Co.

Filters
R. P. Adams Co., Inc.
Bird Machine Company
Cochrane Corp.
General American Transportation Corp.
Hardinge Company, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Walworth Company

Fittings
Crane Company
Ladish Company
Phoenix Products Co.
Walworth Company

Flexible Couplings
Ajax Flexible Coupling Co.

Flooring, Grating and Treads
The Goodyear Tire & Rubber Company
Norton Co.
Raybestos-Manhattan Inc. Manhattan Rubber Division

Flow Boxes, Stainless-Clad
Lukens Steel Co.

Forming Machines
Black-Clawson Co.
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Friction Materials
Johns-Manville Sales Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division

Freeness Testers
Testing Machines, Inc.

Dirtee
Bird Machine Co.

Gaskets
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division

Gears
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John
Westinghouse Electric Corp.

Grinders
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

Grinding Wheels
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Norton Company

Guides, Web
Askania Regulator Company
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.

Gums
National Starch Products Inc.
Stein-Hall Co., Inc.

Heads
Babcock & Wilcox Co.
Lukens Steel Company

Heat Exchangers and Recovery Systems
William Allen Son's Company
Foster Wheeler Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

Heating, Ventilating & Air Conditioning
The Appleton Machine Co.
Armstrong Machine Works
Cochrane Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
Minneapolis-Honeywell Regulator Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

Hoists
Appleton Machine Co.
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

Hose (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division

Impregnants
American Anode Div., The B F. Goodrich Chem. Co.

Industrial Tractors
Clark Equipt. Co., Clark Tractor Div.
Townotor Corp.

Ink Gravure
Gotham Ink & Color Co.

Instruments, Testing and Measuring
Askania Regulator Company
Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Williams Apparatus Co., Inc.

Joints
Johnson Corp.
Perfecting Service Corp.

Jordan Fillings
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

Knives
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

Knot Boring Machines
DeZurik Shower Company

Laboratory Equipment
William Allen Son's Company
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies

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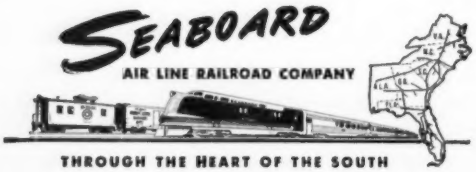
Management everywhere is concentrating on the Southeast in planning new and expanding industries. This region offers many practical advantages for manufacturing and distributing, many reasons why it is the logical *cornerstone* on which to build for the future.

Here the sources of many types of raw materials are close at hand. Here is an adequate labor supply, modern utilities—and a climate that permits uninterrupted year-round operations. Fast, nation-wide distribution, too, can be effected through splendid transportation facilities of the type Seaboard provides for its Southeast neighbors.

Choice industrial sites are now available at many points served directly by Seaboard Air Line Railroad. A brief outline of your plans will bring you a survey of one or more of these locations readily adaptable to your specific purposes. To obtain such factual information, please address

Dallas T. Daily, General Industrial Agent
Seaboard Air Line Railroad Company
Norfolk 10, Va.



Testing Machines, Inc.
Valley Iron Works Co.

Lay Boys
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.
Suburban Machine Co.

Lubricants
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

Materials Handling
Cleveland Crane & Engrg. Co.
The Wellman Engrg. Co.

Micrometers & Calipers
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

Moisture Content Control
Askania Regulator Company
Stickle Steam Specialties Co.

Motors and Generators
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.

Nickel and Nickel Alloys
The International Nickel Co.

Nozzles
Link Belt Company

Packing Boxes
Johnson Corporation
The Moore & White Co.
Perfecting Service Corp.
Shartle Brothers Machine Co.

Packing
Johns-Manville Sales Corp.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.

Paint
American Marietta Co., Valdura Division

Paper Machines
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

Paper Machine Slices
Black-Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

Paper Tube Machinery
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Suburban Machine Co.

Pasting Machines
Black-Clawson Company
Davis, Frank H., Co.
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

Penstocks
The Biggs Boiler Works Co.

Perforated Metal
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.

Where

Pipe
American Cast Iron Pipe Co.
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Johns-Manville Sales Corp.
Ladish Company
Michigan Pipe Co.
Michigan Steel Casting Co.
National Tube Co.
Stowe-Woodward, Inc.
Walworth Company
Youngstown Welding & Engrg. Co.

Pipe Fittings
American Cast Iron Pipe Co.
The American Rolling Mill Co.
Crane Company
Ladish Company
Michigan Steel Casting Co.
Phoenix Products Co.
Walworth Co.

Pitch Control
General Dyestuff Corp.
Monsanto Chemical Company
Rohm & Haas Co.

Platers
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

Plates
Armco Steel Corp.
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
J. O. Ross Engrg. Corp.
Lukenweld
Lukens Steel Company
Timken Roller Bearing Co.

Plugs
The Appleton Machine Co.
Black-Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

Precision Sample Cutter
Testing Machines, Inc.

Preservatives
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

Pressure Vessels, Steel and Alloy
William Allen Son's Company
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
General American Transportation Corp.
Foster Wheeler Corp.
The Midvale Company

Presses
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

Pulp Classifier
The Bauer Bros. Co.

Pulp Stock Valves
Crane Company
Record Fdy. & Mach. Co.
Shartle Bros. Mach. Co.

Pulpers
Bauer Brothers Co.
Dilts Machine Works
Shartle Brothers Machine Co.

Pulps
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hamsson, Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.

to Buy

Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.

Pulpstones
Norton Company

Pumps
Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
American Well Works
Black-Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Frederick Iron & Steel, Inc.
Gibbs-Brower Company, Inc.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Paper Converting Mch. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company

Radiant Burners
Red-Ray Mfg. Co., Inc.

Rag Cooking Processes
Adell Chemical Co.
William Allen Son's Company
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

Rag Cutters
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

Reconstiecizing Plants
General American Transportation Corp.

Recovery Systems
William Allen Son's Company
American Well Works
Babcock & Wilcox Co.
Bulkley, Dunton Pulp Co., Inc.
Combustion Engrg. Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

Reels
The Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

Refiners
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
The Hermann Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

Regulators
Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
Cochrane Corp.
DeZurik Shower Company
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
Minneapolis-Honeywell Regulator Co.
National Technical Laboratories
Paper and Industrial Appliances
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

Resins
American Cyanamid Company, Industrial Chemicals Divisio
The Dow Chemical Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Reichhold Chemicals, Inc.
Rohm & Haas Co., Resinous Products Div.

Rolls
American Cast Iron Pipe Co.
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
The Midvale Company
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stowe-Woodward, Inc.
Valley Iron Works Co.
Waldron Corp., John
The Youngstown Welding & Engrg. Co.

Roll Covers
The Cincinnati Rubber Mfg. Co.
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division
Stowe-Woodward, Inc.

Roll Stands
Cameron Machine Co.
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

Roofing Materials
Johns-Manville Sales Corp.

Rope Carriers
The Moore & White Co.

Rotary Boilers
The Biggs Boiler Works Co.

Rotary Steam Joints
Johnson Corp.
The Moore & White Co.
Perfecting Service Corp.

Rubber Products
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division
Stowe-Woodward, Inc.

Saturants
American Anode Div., The B. F. Goodrich Chem. Co.

Saturating Machines
Black-Clawson Company
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

Savealls
Bird Machine Company
Hardinge Company

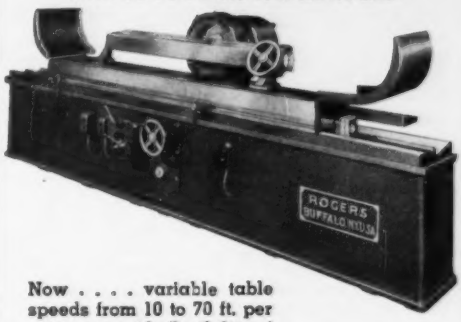
Scales
Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

Screen Plates
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Machine Co.
Union Screen Plate Co.

Screens
Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
American Well Works
Appleton Wire Works
Appleton Machine Company
Bird Machine Company

NEW HYDRAULIC
ROGERS TYPE "NT"
KNIFE GRINDER

with 10 to 70 ft. TABLE SPEED



Now . . . . variable table speeds from 10 to 70 ft. per minute provide flexibility of grinding finishes only obtainable with hydraulic drive. Fingertip control permits high finish at low speed . . . . rough finish at high speed. The most exacting specifications can be met with maximum accuracy. Also features heavy duty construction, 3 motor drive, extra wide "V"-ways, automatic coolant and oiling system, 16" segmental grinding wheel. Six sizes from 48" to 134". Send coupon below TODAY.

ROGERS CC-3 for Flexibility in CIRCULAR GRINDING

A Rugged precision-built machine adaptable to grinding of circular, splitting, double beveled slitter, circle and ring shear knives and bottom slitters with equal speed and accuracy. Capacity: Knives 2" to 20" dia. Available with magnetic chuck and exclusive Rogers attachment for mounting knives between centers.

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Gentlemen:
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- ☐ EXTRACTED PINE STUMP CHIPS.
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- ☐ GROUNDWOOD FINE SCREEN REJECTS.
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- ☐ BLEACHED AND UNBLEACHED SULPHITE.
- ☐ SODA PULP
- ☐ KRAFT KNOTTER REJECTS.
- ☐ KRAFT SCREEN REJECTS.
- ☐ SULPHITE SCREEN REJECTS.
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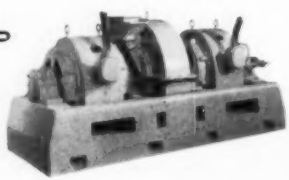
THE **BAUER BROS.** CO.
SPRINGFIELD, OHIO

Bauer



Carthage Machine Co.
Diltz Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Harrington & King Perforating Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Trimbey Mach. Wks.
Valley Iron Works Co.

Sheet Machines
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
The Hermann Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.

Shower Pipes
Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

Shredders
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

Sizing
American Cyanamid Company, Industrial Chemicals Division
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
Monsanto Chemical Company
National Aluminate Corp.
Philadelphia Quartz Co.
Stein-Hall Co., Inc.

Sizing Tester
W. & L. E. Gurley

Slime Control
Buckman Laboratories, Inc.
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Mallinckrodt Chemical Wks.
National Aluminate Corp.
Rohm & Haas Co.

Slitters
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Machinery & Prod. Engrg. Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John

Smoke Stacks
William Allen Son's Company
The Biggs Boiler Works Co.

Splicing Tissue
Williams-Gray Co.

Softness-Stiffness Tester
W. & L. E. Gurley
Testing Machines, Inc.

Soluble Oils
Adell Chemical Company
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

Solvents
Adell Chemical Company

Stainless Steel
American Cast Iron Pipe Co.
Armco Steel Corp.
Ingersoll Steel Div., Borg-Warner Corp.
Michigan Steel Casting Co.
The Midvale Company
U. S. Steel Corp.

Where

Starch
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Clinton Industries, Inc.
National Starch Products Inc.
Stein-Hall Co., Inc.

Steam Joints
The Moore & White Co.

Steam Specialties
Babcock & Wilcox Co.
Cochrane Corp.
Combustion Engrg. Co., Inc.
Johnson Corp.
Perfecting Service Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

Steel
Armco Steel Corp.
Carnegie Illinois Steel Co.
Ingersoll Steel Div., Borg Warner Corp.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

Steel, Clad
Babcock & Wilcox Co.
Lukens Steel Company

Steel Plate Shapes and Treads
By-Products Steel Co.

Steel Tanks
William Allen Son's Company
The Biggs Boiler Works Co.

Strapping & Strapping Machines
The Stanley Works

Stuff Chests
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

Suction Boxes
Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Suction Unit
Paper & Industrial Appliances, Inc.

Sulphur
American Cyanamid Company, Industrial Chemicals Division
Texas Gulf Sulphur Co.
Witco Chemical Company

Sulphur Burners
Valley Iron Works Co.

Sulphur Dioxide
Ansul Chemical Company
Virginia Smelting Co.

Superealenders
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

Synthetic Latices
American Anode Div., The B. F. Goodrich Chem. Co.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

Tachometers
The Brown Instrument Co.

Talc
American Cyanamid Company, Industrial Chemicals Division
W. H. Loomis Talc Corp.

Tank Cars
General American Transportation Corp.

Tank Cleaning Tools
Aurand Mfg. & Equipt. Co.

Tanks
William Allen Son's Company
The Biggs Boiler Works Co.
Cochrane Corp.
General American Transportation Corp.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.

to Buy

The Noble & Wood Machine Co.
Raybestos-Manhattan Inc., Manhattan Rubber Division
B. F. Perkins & Son, Inc.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
Waldron Corp., John

Tearing Testers
Testing Machines, Inc.

Tensile Testers
B. F. Perkins & Son, Inc.
Testing Machines, Inc.

Thickeners, Deckers and Savealls
American Well Works
The Appleton Machine Co.
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Cheney Bigelow Wire Works
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
General American Transportation Corp.
Hardinge Co., Inc.
Improved Paper Machy. Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Oliver United Filters, Inc.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

Titanium
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

Tools
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

Tractors & Trucks
Towmotor Corp.
Clark Equipt. Co., Clark Tractor Div.

Transmissions
Link Belt Company

Traps
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

Tubes
Babcock & Wilcox Co.
National Tube Co.

Tubing, Mechanical
National Tube Co.

Tubs
Rodney Hunt Machine Co.
Shartle Brothers
Valley Iron Works Co.

Turbines
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

Turpentine Recovery
Foster Wheeler Corp.

Used Equipment
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.
Suburban Machine Co.

Valves
Askania Regulator Co.
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Crane Company
Dilts Machine Works
The Foxboro Company
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

Vats & Vat Parts
Union Machine Co.
Union Screen Plate Co.

Washers
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

Waste Treating Equipment
Alhydro, Inc.
American Well Works

Water Conditioning
Alhydro, Inc.
American Well Works
Calgon, Inc.
Cochrane Corp.
General Dyestuff Corp.
National Aluminate Corp.

Water Dispersions
Alhydro, Inc.
American Anode, Inc.
Rohm & Haas Co., Resinous Products Div.

Waxes
Hercules Powder Co.

Waxing Machinery
Black-Clawson Co.
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co
Waldron Corp., John
Weber, Herman G.

Welding Equipment
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company

Wet Machines
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

Wetting Agents
American Cyanamid Company, Industrial Chemicals Division
Adell Chemical Company
General Dyestuff Corp.
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Winders and Rewinders
The Appleton Machine Co.
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Machinery & Prod. Engrg. Corp.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Waldron Corp., John

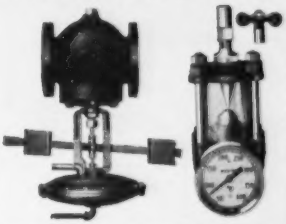
Wire Brushes
M. W. Jenkins Sons Inc.

Wires
Appleton Wire Works
Bulkley, Dunton Pulp Co., Inc.
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

Wire Brushes
Williams-Gray Co.

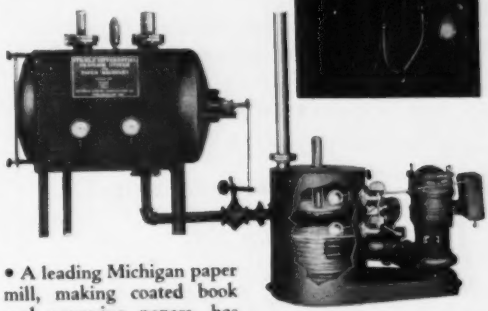
Wood Splitters
The Appleton Machine Co.
Carthage Machine Co.

GIVES PAPER MACHINES GREATER CAPACITIES



Stickle Automatic Tension and Thermal Drying System supplies closely controlled drying results. There is always sufficient steam to meet requirements of the sheet. Over-regulation is eliminated and uniform drying, at a predetermined moisture content is assured. (Below) Instrument panel of Stickle Thermal Control.

(Above) Stickle Differential Valve maintains positive differential between the two sections of machine for circulation and dryer drainage. Stickle Micro Adjustable Orifices supply visible check on operation of individual dryers. (Below) Stickle Vacuum Differential Drainage System gives a drying range from 15" of vacuum to 12 lbs. of steam pressure.



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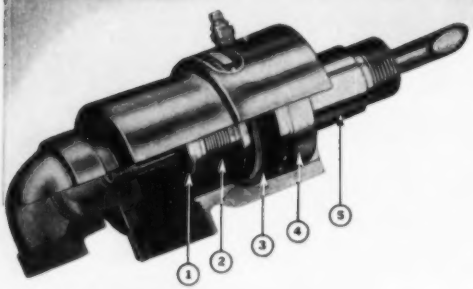

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ADVERTISERS

IN THIS ISSUE

A

Ajax Flexible Coupling Co., Inc. 138
American Cyanamid Co. 109
Amer. Lignite Products Co. ... 140
Amer. Polymer Corp. 152
Appleton Wire Works, Inc. .. 138
Appleton Woolen Mills 3

B

Bagley & Sewall Co. 19
Bahr Brothers 168
Bailey Meter Co. 62
Bauer Bros. Co. 176
Bendix Chemical Corp. 158
Bird Machine Co. 61
Birk, F. Paul 168
Brady, W. H., Co. 152
Brown Co. 11
Brown Instrument Co. 9
Bulkley, Dunton & Co. ....15 & 179
Bunge Co., Alfred 159

C

Cameron Machine Co. 26
Castle & Overton 91
Chicago Electric Co. 156
Ciba Co. 99
Clark, Frederic C. 168
Clark Tructractor Div., Clark Equipt. Co. 150
Classified Advertising 163
Cleveland Crane & Engrg. Co. 129
Cochrane Corp. 135
Cowles Chemical Co. 156

D

Davis, Engrg. Corp. 130
Davis, Frank H., Co. 165
Dietz Machine Works 156
Downingtown Mfg. Co. 2
DuPont, E. I., de Nemours & Co., Dyestuffs Div. 45
DuPont, E. I., de Nemours & Co., Pigments Div. 117

F

Fairbanks Morse & Co. 49
Farrel Birmingham Co. 29
Federal Paper Board Co., Inc. . 160
Ferguson, Hardy S. 168
Ferguson, H. K., Co. 141
Foxboro Co. 41

G

Gaillet & Hartig Co., Inc. 156
General Chem. Div., Allied Chem. & Dye Corp. 13
General Dyestuff Corp. 133
General Electric Co. .....20 & 21
Goodrich Chemical Co. 23
Goslin Birmingham Mfg. Co. ... 153
Gotham Ink & Color Co. 153
Gottesman & Co., Inc. ..Front Cover
Gurley, W. & L. E. 152

H

Hall Co., Inc., Thomas W. ... 166
Hansson, Ekf, Inc. 16
Hardy, George F., & Son 168
Heppenstall Co. 111
Hercules Powder Co. 27
Hooker Electrochemical Co. ... 30
Hough, Frank G., Co. 123
Hubbard Spool Co. 119
Hudson Sharp Mach. Co. 159
Huyck & Sons, F. C. 7

I

Industrial Brownhoist Corp. .. 107
International Wire Works 168

J

Jackson Co., Byron 139
Johnson, Alvin H., & Co. 168
Jones, E. D., & Sons Co. 34

K

Kalamazoo Tank & Silo Co. .. 22
Kalamazoo Veg. Parch. Co. ... 36
Kidder Press Co. 51
Kinsley Chemical Co. 154
Knox Woolen Co. 160
Koppers Co. 35

L

Langston, Samuel M., Co. 154
Lindsay Wire Weaving Co. 131
Link Belt Co. 63
Lobdell Co. 47
Lockport Felt Co. 10
Lukens Steel Co. 38
Lynch Corporation 105

M

Magnus Metal Corp. 155
Mann, Charles T., Inc. 168
Mallinckrodt Chemical Works .. 154
Mead Sales Co. 17
Meincke & Son, Inc., A. M. 80 & 81
McPherson Co., The 168
Michigan Steel Casting Co. 168
Mt. Vernon-Woodberry Mills . 43
Montague Machine Co. 151
Moore & White Co. 103
Morden Machines Co. 136
Mt. Hope Mchy. Co. 157
Murray, D. J., Mfg. Co. 40

N

National Aniline Div., Allied Chem. & Dye Corp. 37
National Tech. Labs. 85
Noble & Wood Mch. Co. 44
Nopco Chemical Co. 6
Northern Eng. & Mch. Co. 168
Northwest Paper Co. 115
N. Y. Color & Chem. Co. 173

O

O'Donoghue, Roderick 168

P

Pagel Horton & Co., Inc. 137
Paper Converting Machine Co. . 154
Paper & Industrial Appliances . 75
Perfecting Service Corp. 178
Perkins-Goodwin Co. 12
Philadelphia Quartz Co. 172
Price & Pierce, Ltd. 160
Puget Sound Pulp & Timber Co. 48
Pulp Sales Corp. 76
Pusey & Jones Corp. 52

R

Reading Chain & Block Corp. . 128
Red Ray Mfg. Co. 154
Research Corp. 18
Restigouche Co., Ltd. 169
Rhoads, J. E., & Sons 14
Rice Barton Research Corp. ... 39
Rogers, S. C., & Co. 175
Rohm & Haas Co., Res. Prod. Div. 121
Ross, I. J., Co. 164
Ross, J. O., Engrg. Corp. 31
Rust Engrg. Co. 168

S

Sandusky Foundry & Mch. Co. 152
Seaboard Air Line R.R. Co. .. 174
Shartle Brothers Machine Co. . 154
Sinclair Refining Co. .....32 & 33
Sindar Corporation 151
SKF Industries, Inc. 42
Smith & Winchester Mfg. Co. 142
Socony Vacuum Oil Co. Back Cover
Solvay Sales Div., Allied Chem. & Dye Corp. 169
Stein Hall Co., Inc. 171
Stickle Steam Specialty Co. ... 177
Suburban Mch. Co. 158
Sutherland Refiner Corp. 147

T

Taylor Instrument Cos. 46
Taylor, Stiles & Co. 170
Texas Co., The 4
Thomas Paper Stock Co. 160
Titanium Pigment Corp. 28

U

United Carbon Co. 89

W

Waldron Corp., John 8
Walterstein Co. 155
Waterbury Felt Co. 158
West Virginia Pulp & Paper Co. 50
Weyerhaeuser Timber Co. 15
Wierk, Frederick 168
Williams-Gray Co. 24
Witco Chemical Co. 161
Wolfe & Co., Jacques 167
Wyandotte Chemicals Corp. ... 24

Y

Youngstown Welding & Engrg. Co. 161

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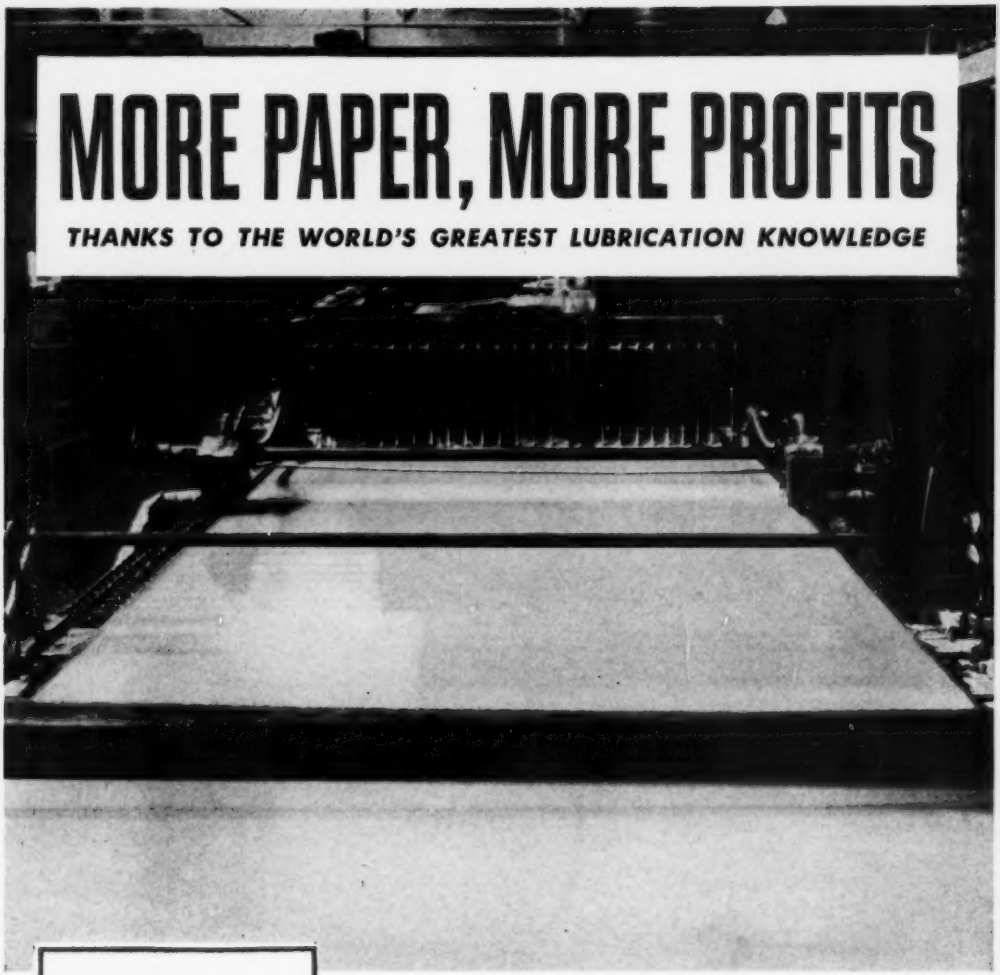

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